Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Improving Solar & Load Forecasts: Reducing the Operational Uncertainty Behind the Duck Chart	Applied Research	This project plans to improve solar forecasts for grid-connected PV in California, use those improved forecasts to create enhanced net-load forecasts, and apply these enhanced forecasts to reduce scheduling errors for utilities and the California Independent System Operator (CAISO).	12/10/2014	No	Generation	\$998,926	\$998,926
2012-2014 Triennial Investment Plan	CEC	Investigating Flexible Generation Capabilities at the Geysers	Applied Research	This project will investigate how the operation of Geysers geothermal facilities may be modified in order to address the greater demands imposed on the grid by the significant addition of intermittent resources. To do so, the project will develop an integrated model that simulates the effects of providing flexible operation on the reservoir, wells, pipelines, and power plants. The model will be tested at an isolated well(s), pipeline and power plant, and then at a cross-tied location, to determine the effects of flexible operation on the larger steam field. Results will be used to identify risks to structure and operations. Management and mitigation strategies needed to address specific flexible generation objectives will be identified and tested at a variety of representative problem areas. An evaluation of management strategies and costs will be developed to provide flexible generation and ancillary services.	12/10/2014	No	Generation	\$3,000,000	\$3,000,000
2012-2014 Triennial Investment Plan	CEC	Low- Cost Thermal Energy Storage for Dispatchable CSP	Applied Research	The innovation in this project is the use of a system cost-optimal approach that employs a robust and low-cost thermal energy storage (TES) fluid, elemental sulfur. Use of sulfur as a TES fluid will enable overall low system costs, long lifetime, and scalability for a wide range of concentrating solar power (CSP) applications and temperatures. The primary objectives of the project are to: 1. Develop an innovative and low-cost TES system for CSP systems using elemental sulfur, along with a system/cost model for system and market analyses. 2. Perform an on-sun pilot-scale demonstration of a modular single-tank TES design along with laboratory and computational analyses to validate long-term component life and performance. 3. Develop a market strategy and IP portfolio for the proposed system and single-tank thermal battery designs.	12/10/2014	No	Generation	\$1,497,024	\$1,497,024

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Systems Integration of Containerized Molten Salt Thermal Energy Storage in Novel Cascade Layout	Applied Research	The project aimed to build, validate, thermally cycle, and pilot test a modular 75 kW, 6 hour (500 kWh) molten salt thermal energy storage (TES) system, using standard shipping containers and commercially available tanks and insulation. The project leverages a novel cascaded tank arrangement and high-volume manufacturing and factory assembly, to significantly reduce the installed cost of TES for concentrating solar power (CSP).	12/10/2014	No	Generation	\$1,500,000	\$1,500,000
2012-2014 Triennial Investment Plan	CEC	Solar Forecast Based Optimization of Distributed Energy Resources in the LA Basin and UC San Diego Microgrid	Applied Research	This project aims to integrate high-accuracy solar forecasting to optimize the operation of distributed energy resources, and utilize the value of solar forecasting in utility grid operations to improve grid reliability, reduce ratepayer costs and increase safety. The objectives are to apply forecasts to inform control and scheduling decisions for distributed energy resources with emphasis on energy storage and electric vehicle charging control at warehouse photovoltaic clusters in the LA-Orange-Riverside-San Bernardino-San Diego Counties as well as the UCSD microgrid.	12/10/2014	No	Generation	\$999,984	\$999,984
2012-2014 Triennial Investment Plan	CEC	Improving Short-Term Wind Power Forecasting through Measurements and Modeling of the Tehachapi Wind Resource Area	Applied Research	This project comprises coordinated atmospheric field measurements and computational modeling improvements to improve the accuracy of prediction of short-term wind ramps (i.e. large, rapid changes in wind power production). The Tehachapi Pass Wind Resource Area will be the focus of the project. Since the area features complex terrain and meteorology, the findings can be readily adapted and applied to many other regions.	12/10/2014	No	Generation	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	High-Fidelity Solar Power Forecasting Systems for the 392 MW Ivanpah Solar Plant (CSP) and the 250 MW California Valley Solar Ranch (PV)	Applied Research	This project will focus on the development and validation of tools capable of monitoring and forecasting the DNI solar component and the power generation accurately, from 5 minutes out to 72 hours in the future, mainly at the Ivanpah Solar Thermal plant. The project will also include the development of tools for predicting wind speed, which affects the heliostats' deployment, and produce a generation forecast via a Resource-to-Power Model (RTP). The goal of this system is aimed at reducing uncertainties associated with operation, regulation and scheduling of Ivanpah. The new forecast models will be used as a feed forward input to the RTP model in the solar field controls system that will enable the solar field to preemptively position itself for weather transients.	12/10/2014	No	Grid Operations/Market Design	\$999,898	\$999,898

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2012-2014 Triennial Investment Plan	CEC	Optimizing Radiant Systems for Energy Efficiency and Comfort	Applied Research	The purpose of this project is to develop new practical design and operation tools for radiant cooling and heating systems in order to provide a standardized guidance for radiant systems. The technical approach will include a combination of fundamental full-scale laboratory experiments, whole-building simulations, development of simplified models for radiant system controls, validation of these new methods in field studies, occupant satisfaction surveys, and an update to Title-24 for radiant systems. The project outcomes will include 1) a simplified tool for calculating the cooling load and cooling capacity of a radiant slab system, including calculation methods with significant direct solar radiation, 2) a simplified online operational tool for radiant slab systems, and 3) updates to the Title 24 Alternative Calculation Method Reference Manual to enable improved modeling capabilities of radiant systems.	2/25/2015	Yes	Demand-side Management	\$2,939,964	\$2,939,964
2012-2014 Triennial Investment Plan	CEC	Solar-Reflective "Cool" Walls: Benefits, Technologies, and Implementation	Applied Research	This project will (a) quantify the energy savings, peak demand reduction, urban cooling, and air quality improvements attainable from cool walls in California; (b) assess the performance of existing cool wall technologies, and develop innovative cool wall solutions; and (c) facilitate collaboration among government agencies, utilities, and industry to create a cool-wall infrastructure that includes application guidelines, a product rating program, incentives, and building code credits.	2/25/2015	Yes	Demand-side Management	\$2,500,000	\$2,500,000
2012-2014 Triennial Investment Plan	CEC	From the Laboratory to the California Marketplace: A New Generation of LED Lighting Solutions	Applied Research	This project will result in the design and development of innovative LED lighting solutions for three key general illumination product categories. These solutions are a best-in-class medium, screw-base replacement lamp, linear tubular light emitting diode (TLED) replacement lamps and spectrally optimized, dedicated LED luminaires. Product design requirements will be based on consumer light quality and functional performance preferences determined through a series of unique laboratory-based consumer preference and product characterization studies.	2/25/2015	Yes	Demand-side Management	\$2,995,187	\$2,995,187
2012-2014 Triennial Investment Plan	CEC	Comparing Attic Approaches for Zero Net Energy Homes	Applied Research	The project will focus on the performance of different attic assemblies and their associated heating, ventilating and air conditioning (HVAC) systems. Field measurements of attic and HVAC system performance will be conducted in two new high performance homes in California with sealed and insulated attics. One home will be built to be about 30 percent better than Title 24 and the other will be a ZNE home. The attic insulation approach will be a new lower-cost approach using blown insulation that does not use expensive spray-foam. The results of the measurements will be used directly to provide technical support for potential changes to Title 24 and provide information to contractors and builders on sealed and insulated attic performance and alternative approaches.	2/25/2015	Yes	Demand-side Management	\$1,000,000	\$1,000,000

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2012-2014 Triennial Investment Plan	CEC	Very Low-cost MEMS- based Ultrasonic Anemometer for Use Indoors and in HVAC Ducts	Applied Research	This project will develop low-cost, lowpower, accurate, calibration-free, and compact airflow sensors (anemometers) for measuring: (1) room airflow in occupied commercial buildings; and (2) volumetric air flow in heating, ventilation and air conditioning (HVAC) systems. The technology will save energy by using the collected data to correct current wasteful HVAC malfunctions that result in inefficient systems and uncomfortable buildings. The anemometers will be wireless, able to be inexpensively installed in existing buildings, and operate on a battery for years and communicate wirelessly via the internet to the building's control system. The device will also sense temperature, its orientation, and its location.	2/25/2015	Yes	Demand-side Management	\$2,488,964	\$2,488,964
2012-2014 Triennial Investment Plan	CEC	Direct Current as an Integrating and Enabling Platform	Applied Research	This project will research direct current (DC) and alternating current (AC)-DC hybrid systems in ZNE buildings and develop resource information, end-use templates, and building guidelines that could improve the ability to achieve zero net energy buildings. The feasibility, costs, benefits, market barriers, and customer and education needs will be assessed, including guidelines for residential and small commercial buildings.	2/25/2015	Yes	Demand-side Management	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	Cost- and Energy- Efficient Attic Designs for California Homes	Applied Research	Three different attic designs will be refined, tested, evaluated, and demonstrated in new home construction. The team will recommend the best of these approaches to home builders addressing cost-effectiveness and energy-efficiency. The baseline for comparison will be current energy efficiency code practices for attic construction involving ventilated, un-insulated attics containing code compliant ducts. The team will evaluate the new design approaches analytically at the start of the project. Researchers will assess approaches that include methods to produce sealed, insulated attics, as well as, standard vented attics, both of which have been demonstrated and are in limited use in the market today but currently add considerable cost to builders. The team will employ new and novel installation methods and materials that have the potential for energy savings on par with ducts in the conditioned space, but at a cost similar to current practice.	2/25/2015	Yes	Demand-side Management	\$1,000,000	\$1,000,000

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2012-2014 Triennial Investment Plan	CEC	Developing Flexible, Networked Lighting Control Systems That Reliably Save Energy	Applied Research	The recipient will develop low-cost lighting components with open communication interfaces, that allow seamless integration into whole-building control and automation systems. The project will target future California Building Energy Efficiency Standards (Title 24), and establish methods by which the site-specific configuration and operation of networked lighting controls systems can be effectively addressed, and more easily implemented by the marketplace.	2/25/2015	Yes	Demand-side Management	\$1,875,000	\$1,875,000
2012-2014 Triennial Investment Plan	CEC	Validated and Transparent Energy Storage Valuation and Optimization Tool	Applied Research	This project will develop, test, and validate a publicly available computer model for the CPUC's energy storage use cases to determine the most optimal energy storage systems. This software model will assess costs and benefits and will guide energy storage projects with respect to location, size, and type. The software will be publicly released as a cloud-hosted tool.	3/11/2015	Yes	Grid Operations/Market Design	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	Development and Testing of the Next Generation Residential Space Conditioning System for California	Applied Research	This project will develop a next-generation residential space-conditioning system optimized for California climates. The advanced efficiency solutions integrated into the HVAC system will include: variable-capacity compressor and variable-speed fans using state-of-the-art inverter technology; integrated ventilation to harness fresh air for "free cooling;" intelligent dual-fuel technology to decrease energy cost and empower consumers to choose between electricity and natural gas; zonal control to prevent conditioning of unoccupied rooms; demand-response interactivity to grid flexibility and reliability; advanced fault detection and diagnostics to ensure proper installation, operation, and maintenance; and alternative refrigerants for improved operation and significant reductions in the potential for global warming.	4/8/2015	Yes	Demand-side Management	\$2,993,005	\$2,993,005
2012-2014 Triennial Investment Plan	CEC	The Lakeview Farms Dairy Biogas - To - Electricity Project	Technology Demonstration and Deployment	ABEC #3 LLC, DBA Lakeview Farms Dairy Biogas will install and demonstrate an innovative covered lagoon digester system that will process dairy manure into biogas to generate renewable electricity for export to the electricity distribution grid. This particular project is located near 11 other dairies and will help launch the state's first "hub-and-spoke" dairy digester cluster by preparing the 1 MW generator platform to accept 2 MWs of future capacity potentially utilizing biogas from neighboring dairies. This hub and spoke approach was initially proposed in a case study prepared for the USDA on the economic feasibility of dairy digester clusters in California. The idea is to allow the dairies to benefit from the aggregation of capital investment and reduce operation and management costs by centrally locating the generators and associated electrical equipment.	3/11/2015	Yes	Generation	\$4,000,000	\$4,000,000

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2012-2014 Triennial Investment Plan	CEC	Utility Demonstration of Znyth Battery Technology to Characterize Performance and Grid Benefits	Applied Research	Eos will perform pilot testing of a 125 kW/375 kWh AC-integrated energy storage system consisting of approximately 140 Eos ZnythTM battery modules. The system will be installed at PG&E's Advanced Technology Services laboratory and at the grid simulation testing 'Distribution Test Yard' in San Ramon, CA. System performance will be characterized against a variety of use cases, including peak shaving, ancillary services, load following, and frequency regulation. Eos will model a portion of PG&E's distribution network to create simulated grid conditions that will allow for dynamic testing of the battery before its deployment to the electricity grid. Eos will also model, simulate, and extrapolate the economic impacts of installed grid scale systems and quantify the expected benefits to California utilities and ratepayers.	4/8/2015	Yes	Distribution	\$2,156,704	\$2,156,704
2012-2014 Triennial Investment Plan	CEC	Modular Biomass Power Systems to Facilitate Forest Fuel Reduction Treatment	Applied Research	This project will develop a modular system that can be rapidly deployed to communities across California to promote and support fire-safe management activities. The project will develop a pilot-scale modular biomass gasification system integrated with a high-efficiency lean-burn engine in order to convert forest residues into renewable grid power to reduce the cost and increase the benefits of forest fuel reduction projects in high fire risk regions of the state.	3/11/2015	Yes	Generation	\$2,000,000	\$2,000,000
2012-2014 Triennial Investment Plan	CEC	Mass-manufactured, Air Driven Trackers for Low Cost, High Performance Photovoltaic Systems	Applied Research	The project will install and test a 300 kW photovoltaic solar system with air driven trackers for research purposes at a facility that is already used for these types of activities. Two key technical innovations will be demonstrated. First, the use of mass manufacturing for the drive system results in an extremely low cost structure and very low part count. Second, only tubing is connected to each actuator, removing requirements for outdoor wiring or individual control hardware. The proposed research will also involve collecting six-month performance data for the proposed solar PV tracking technology.	3/11/2015	Yes	Generation	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	Examining the Heterogeneity of Energy Efficiency Adoption and Savings Across Socio- Economic and Ethnic Groups Using a Large Scale Quasi-Experiment	Market Facilitation	This project will conduct a quasi-experimental, econometric study of energy efficiency adoption and energy savings with a focus on differences between social, cultural, and socio-economic groups. The study will apply modern economic methods, including regression-discontinuity and propensity score matching. The large data sets and rigorous methods will result in precise estimates to improve demand forecasts, energy efficiency program design, and future energy studies concerning social, cultural, and socioeconomic groups.	4/8/2015	Yes	Demand-side Management	\$360,632	\$360,632

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2012-2014 Triennial Investment Plan	CEC	High Temperature Hybrid Compressed Air Energy Storage (HTH- CAES)	Applied Research	This project will build a fully-functional, low-cost and scalable high temperature hybrid compressed air energy storage (HTH-CAES) system that can efficiently store grid-level energy from renewable sources and release that energy when it is needed to meet peak demand, particularly for ancillary services and load following use-cases. The HTH-CAES system utilizes a state of the art, high temperature energy storage unit to reduce losses in the air compression process. This innovative technology offers a highly efficient, ultra low cost solution for mitigating intermittent renewables.	4/8/2015	Yes	Distribution	\$1,621,628	\$1,621,628
2012-2014 Triennial Investment Plan	CEC	Low Cost Biogas Power Generation with Increased Efficiency and Lower Emissions	Applied Research	This project will deploy a pre-commercial technology demonstrating a sorbent-based biogas purification process for combined heat and power generation at the pilot scale that removes multiple troublesome impurities from biogas, upgrading the fuel to near-pure methane for combustion in conventional prime movers. The pilot plant will be installed and tested at a brewery wastewater plant and at a landfill site to demonstrate the environmental and cost benefits of biogas purification prior to use in combined heat and power applications.	3/11/2015	Yes	Generation	\$1,318,940	\$1,318,940
2012-2014 Triennial Investment Plan	CEC	The West Star North Dairy Biogas-to - Electricity Project	Technology Demonstration and Deployment	This project will advance digester design by building and demonstrating an innovative, double-cell covered lagoon digester and 1-megawatt (MW) generation system. The system will convert dairy manure into biogas and store the biogas above the Primary and Secondary Lagoons under an inflatable cover. The biogas will be converted into renewable electricity anticipated for sale and export to the PG&E distribution grid through a SB 1122 Bioenergy Feed-in Tariff. Further, dairy biogas systems qualify for participation in the CPUC's Assembly Bill (AB) 2514 electricity storage program. In a future phase, the biogas system may compete for an energy storage contract. The project will also improve groundwater protection by minimizing leaching of manure into groundwater.	3/11/2015	Yes	Generation	\$4,000,000	\$4,000,000
2012-2014 Triennial Investment Plan	CEC	Paths to Sustainable Distributed Generation Through 2050: Matching Local Waste Biomass Resources with Grid, Industrial, and Community Levels	Applied Research	This project will highlight locations where waste biomass can be used most efficiently and sustainably for distributed generation by developing scenarios through 2050 that identify the most promising opportunities for waste biomass DG, identify key technical and regulatory hurdles to waste biomass DC utilization, develop tools for matching available waste biomass resources with energy production opportunities, and suggest solutions for achieving cost parity with fossil fuels.	3/11/2015	Yes	Generation	\$1,500,000	\$1,500,000

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2012-2014 Triennial Investment Plan	CEC	Pollution Control and Power Generation for Low Quality Renewable Fuel Streams	Technology Demonstration and Deployment	The project will utilize a 250 kW gas turbine system that converts relatively dirty, low heating value fuels into heat using gradual oxidation. This gradual oxidation technology was developed by Ener-Core, a California company, and has been demonstrated in operating systems for well over 500 hours, but has not yet been commercially deployed in California. The intended site for the demonstration is a closed landfill producing low quality gas that is currently flared. This site is a good match for the proposed 250kW demonstration as it will eliminate the flaring of the otherwise unusable gas by generating electricity for onsite use and use in other county-owned facilities as facilitated by SB 1122 or SB 43. The project will be carried out in collaboration with Orange County Waste & Recycling who is responsible for the test site.	4/8/2015	Yes	Generation	\$1,499,386	\$1,499,386
2012-2014 Triennial Investment Plan	CEC	Capturing Cultural Diversity in California Residential Energy Efficiency Potential: An Energy Ethnography of Hispanic Households	Market Facilitation	This project will focus on reaching Hispanic subpopulations in California to better understand the social, cultural, and behavioral aspects of their decisions to adopt energy efficient technologies and behaviors. The study will combine data collected from participants via energy usage journals, in-home interviews, and energy meters to further the knowledge of Hispanic cultural associations and beliefs related to energy use decisions and choices. The information gathered in this study can be used to improve the metrics and assumptions underlying energy demand forecasting and energy efficiency potential and goals studies. In addition, the study will provide information that can be used for targeted marketing of energy efficiency programs to the Hispanic population and improved levels of service to these households.	4/8/2015	Yes	Demand-side Management	\$224,593	\$224,593
2012-2014 Triennial Investment Plan	CEC	North Fork Community Power Forest Bioenergy Facility Demonstration	Technology Demonstration and Deployment	The North Fork Forest Bioenergy project will construct and demonstrate a 1 megawatt (MW) forest waste bioenergy gasification-to-electricity facility in the toothills of the Sierra Mountains. The biomass gasification facility is targeted to be a commercial-scale, community-based facility capable of accepting and processing wood waste from forest management that would otherwise create wildfire and air quality challenges, and generating renewable grid-connected electricity. Key activities of the project will include investigation of the best practices including evaluation of individual components and protocols to improve performance and reduce operating costs.	4/8/2015	Yes	Generation	\$4,965,420	\$4,965,420

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2012-2014 Triennial Investment Plan	CEC	Interra Reciprocating Reactor for Low-Cost & Carbon Negative Bioenergy	Applied Research	The purpose of this project is to install a pilot-scale demonstration of an innovative biomass conversion system to generate high quality biomethane with high fixed carbon biochar as co-product. The projects will determine if the technology, known as Reciprocating Reactor, coupled with valuable co-product, are sufficient to demonstrate economic feasibility for small distributed generation bioenergy projects in California.	4/8/2015	Yes	Generation	\$2,000,000	\$2,000,000
2012-2014 Triennial Investment Plan	CEC	Demonstration of integrated photovoltaic systems and smart inverter functionality utilizing advanced distribution sensors	Applied Research	The research project will develop, demonstrate, and evaluate, at the pilot scale, the ability of an integrated, advanced PV and storage system at a state-of-art test bed in the LBNL Facility for Low Energy Experiments (FLEXLAB). The system includes smart inverter control to enhance and optimize grid support and system performance. The strategy will evaluate the use of distribution synchrophasor units data to support specific visualization and control applications on distribution circuits. The project includes a 13 to 15 kilowatt (kW) PV electric generating system and a 14 kW (56 kW-hour [KWH]) battery storage installation at FLEXLAB.	4/8/2015	Yes	Grid Operations/Market Design	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	Smart Inverter Interoperability Standards and Open Testing Framework to Support High- Penetration Distributed Photovoltaics and Storage	Applied Research	The purpose of this agreement is to develop a complete solution of smart solar PV-based DER system that addresses key barriers impeding the progress towards high penetration of solar and DER. The work includes development of a CA Rule 21 test framework and test scripts; compliance testing of smart inverters with functionality as described in the CPUC CA Rule 21 Smart Inverter Working Group (SIWG) recommendations; monitor and control inverter operating functions including participation in ancillary service for diverse DER assets; increase of photovoltaic (PV) penetration and cost effectiveness while enhancing safety and reliability of the California grid. This agreement will deliver a smart inverter test framework and open source software tools to enable rapid product development and safety testing and will demonstrate the benefits to all stakeholders including ratepayers, utilities, manufacturers, investors and operators.	4/8/2015		Grid Operations/Market Design	\$2,000,000	\$2,000,000

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2012-2014 Triennial Investment Plan	CEC	Home Energy Efficiency Retrofits in California: An Analysis of Sociocultural Factors Influencing Customer Adoption	Market Facilitation	This project will conduct a multidisciplinary, data driven study to understand the role and interactions of various factors influencing the adoption and utilization of residential energy efficiency measures. The study will provide insight into the stand alone and interactive effects of factors such as income, ethnicity, language, and political orientation on the adoption of energy efficient technologies. The study will facilitate the learnings from prescriptive energy-efficiency programs in California and enhance energy policy and program design.	4/8/2015	Yes	Demand-side Management	\$599,924	\$599,924
2012-2014 Triennial Investment Plan	CEC	Fieldwork to Document Technology Adoption and Behavior Change Across Diverse Geographies and Populations to Inform Energy Eficiency Program Design	Market Facilitation	This project will use empirical research methods grounded in anthropology and other social and behavioral sciences to explore the factors affecting behavior beyond simply economic rational. This practice will be achieved by documenting and analyzing emerging attitudes, emotions, experience, habits, and practices around technology adoption for purposes of devising predictive indicators for ongoing potential studies regarding energy consumption in California.	4/8/2015	Yes	Demand-side Management	\$574,545	\$574,545
2012-2014 Triennial Investment Plan	CEC	Cultural Factors in the Energy Use Patterns of Multifamily Tenants	Market Facilitation	This project will examine the cultural and demographic factors that correlate with multifamily tenants' electric energy use patterns, before and after energy efficiency upgrades. For this project, a field experiment will be conducted to better determine how cultural factors influence tenant interest in consumer level technologies that can reduce electricity use, especially for lighting and plug loads.	4/8/2015	Yes	Demand-side Management	\$379,019	\$379,019
2012-2014 Triennial Investment Plan	CEC	Self-Tracking Concentrator Photovoltaics for Distributed Generation	Applied Research	This research will develop, test, and demonstrate Self-Tracking Concentrator Photovoltaic (ST-CPV) systems, a new concentrator photovoltaic technology that does not require a precision mechanical tracker to keep it aligned to the sun. The ST-CPV panel contains a thin layer of fluids that passively responds to the changing solar angle, automatically adjusting optical pathways within the device to ensure that incident sunlight is captured and concentrated over a wide range of angles. The passive internal tracking allows ST-CPV panels to be mounted in a stationary configuration or with a simple single axis tracker. This makes the system highly economical, greatly reduces installation and maintenance complexity, and enables distributed generation with higher efficiency CPV modules.	5/13/2015	Yes	Generation	\$999,940	\$999,940

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2012-2014 Triennial Investment Plan	CEC	Installation of a Lean Burn Biogas Engine with Emissions Control to Comply with Rule 1110.2 at a Wastewater Treatment Plant in South Coast Air Quality Management District	Technology Demonstration and Deployment	Biogas & Electric will design, build and install a continuously operating commercial scale emissions reduction system for the lean burn biogas engine(s) at a municipal wastewater treatment plant in Palm Springs California. The technology being deployed is a low cost NOx and SOx reduction wet scrubbing technology called NOxRx (a registered trademark) which can be used in conjunction with all biogas engines and anaerobic digesters in the market today. NOxRx has a patented method of utilizing the effluent stream from an anaerobic digester to reduce emissions from biogas engines. Unlike SCR, it does not produce N2O and does not require H2S removal or biogas conditioning prior to combustion. Therefore, NOxRx represents a significant cost savings over competing NOx reduction solutions. The chief goal of this demonstration will be to demonstrate the commercial viability of NOxRx for biogas-fired lean burn engines to comply with CARB NOx and SOx standards, and SCAQMD Rule 1110.2.	4/8/2015	Yes	Generation	\$2,249,322	\$2,249,322
2012-2014 Triennial Investment Plan	CEC	Enabling Anaerobic Digestion Deployment for Municipal Solid Waste-to-Energy	Technology Demonstration and Deployment	The purpose of this project is to perform research to enable environmentally and economically sustainable deployment of technology that transforms organic municipal solid waste into heat, electricity, and compost via dry anaerobic digestion. A dry anaerobic digestion and composting facility processing the organic fraction of MSW will be scaled up from 40,000 tons/year to 90,000 tons/year, and will increase production of renewable electricity and heat.	4/8/2015	Yes	Generation	\$4,300,000	\$4,300,000
2012-2014 Triennial Investment Plan	CEC	Advanced Recycling to 1- MW Municipal Solid Waste of Electricity Generation	Applied Research	This project will design, develop and test a Waste-to-Energy Process Development Unit (PDU), involving conversion of Refuse Derived Biomass into clean fuel gas by Thermal-Catalytic Gasification, Reforming and Pulse Detonation Technology. This project will start-up and test a 3-pound per minute PDU, evaluate the results, and provide engineering data to design a 30 ton/day plant generating 1-MW electric power.	4/8/2015	Yes	Generation	\$1,499,481	\$1,499,481

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2012-2014 Triennial Investment Plan	CEC	Lowering Food-Waste Co-digestion Costs through an innovative Combination of a Pre- Sorting Technique and a Strategy for Cake Solids Reduction	Technology Demonstration and Deployment	The proposed study will demonstrate two complementary approaches to lower the overall cost of co-digestion: a new technology to lower preprocessing cost of food wastes, and a new strategy to lower the mass of cake solids requiring disposal. The new technology for the preprocessing of food wastes uses an organic waste preprocessing technique known as an organic extrusion press (OEP) for selective extrusion of organic materials and is capable of recovering 95% of organics. The project will apply a new strategy in operating co-digestion systems in a way that will lower the mass of cake solids requiring disposal relative to the conventional process.	4/8/2015	Yes	Generation	\$1,496,902	\$1,496,902
2012-2014 Triennial Investment Plan	CEC	Dairy Waste-to- Bioenergy via the Integration of Concentrating Solar Power and a High Temperature Conversion Process	Applied Research	This project will integrate Concentrating Solar Power (CSP) and Hydrothermal Processing (HTP) into a single, integrated system; confirm that it can convert dairy manure into RNG and bio-crude; study the economics of integrated CSP-HTP systems sited at dairy farms; and confirm that the RNG produced meets pipeline-transmission and geological-storage quality standards. In this way, the project anticipates proving that it is possible to store the energy contained in dairy manure waste in a manner that enables California natural gas plants to produce readily dispatchable, ultra-low-emissions renewable electricity.	4/8/2015	Yes	Generation	\$1,494,736	\$1,494,736
2012-2014 Triennial Investment Plan	CEC	City of Fremont Fire Stations Microgrid Project	Technology Demonstration and Deployment	The Recipient will design and build low carbon-based microgrids at three fire stations in Fremont, California. Each microgrid consists of a microgrid energy management system, parking lot canopy photovoltaic system, and battery energy storage. The automated microgrid control system will optimally manage local energy resources and loads. The microgrid will provide at least three hours a day of power for critical loads during a utility power outage.	4/8/2015	Yes	Distribution	\$1,817,925	\$1,817,925
2012-2014 Triennial Investment Plan	CEC	Cleaner Air, Cleaner Energy: Converting Forest Fire Management Waste to On Demand Renewable Energy	Applied Research	This project offers a solution that addresses a range of California's energy, climate, and air quality goals. Under this grant, a 150kW modular biomass gasification energy device will be designed and deployed. It will make renewable energy from fire remediation material, while dramatically lowering air pollution and meeting applicable air quality standards.	4/8/2015	Yes	Generation	\$1,990,071	\$1,990,071

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Funding Amount	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Community Scale Digester with Advanced Interconnection to the Electrical Grid		The project will install and operate an innovative anaerobic digestion system using an innovative high-rate biodigester technology that will process approximately 50 tons per day (TPD) of organic waste from a large supermarket (Albertsons) distribution center and 50 TPD (20,000 gallons) of high-strength slurry created by recovering and concentrating organics in wastewater streams. This project will be co located with the Co-West Commodities Wastewater Pre-Treatment Facility- an operation that collects wastewater (Carbs, sugar, protein, and fat, grease, and oil known as FOG) from industrial businesses and pre-treats the material for disposal into the local sewer system.	4/8/2015	Yes	Generation	\$5,000,000	\$5,000,000
2012-2014 Triennial Investment Plan	CEC	Bosch-A Renewable Based Direct Current Building Scale Microgrid		This renewable-based DC microgrid will connect on-site generation with loads and provide a low cost, high energy efficiency solution. Solar PV is planned to be directly connected to energy efficient DC lighting, DC energy storage systems, and ventilation on a 380 V DC bus to form a DC building microgrid. This microgrid system reduces the need for DC-AC inverters for PV and AC-DC rectification equipment in the loads, thus improving the overall utilization of solar energy by 7-10% as compared to conventional AC systems, while lowering component complexity and cost. The DC Microgrid system also provides a more reliable and resilient power supply to critical loads. Bosch has brought together top industry expertise in electricity grid analysis and commercial building electrical design, such as Navigant Consulting and the California Lighting Technology Center at UC Davis. They will partner with Bosch on design, technical validation and economic analysis.	4/8/2015	Yes	Distribution	\$2,817,566	\$2,817,566
2012-2014 Triennial Investment Plan	CEC	Demonstrating a Community Microgrid at the Blue Lake Rancheria	Demonstration	This project will demonstrate the ability of a community-scale microgrid to bolster the resiliency of an American Red Cross critical support facility. The project will demonstrate the capability of the microgrid to power itself with a high penetration of local renewable resources. The microgrid will be designed to island indefinitely.	6/10/2015	Yes	Distribution	\$5,000,000	\$5,000,000

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Funding Amount	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Las Positas Community College Microgrid	Technology Demonstration and Deployment	This project will demonstrate the ability of a commercial-scale microgrid to optimize distributed energy resources for customers, distribution utilities, and the California ISO by using advanced energy management tools to coordinate a high penetration of customer renewable energy assets with multiple energy storage technologies on a community college microgrid.	4/8/2015	Yes	Distribution	\$1,522,591	\$1,522,591
2012-2014 Triennial Investment Plan	CEC	Demonstration of Electric Vehicle Smart Charging and Storage Supporting Grid Operational Needs	Technology Demonstration and Deployment	The Recipient will develop and demonstrate technologies that integrate electric vehicles into the electrical grid. The Recipient's core technology of using networked devices to collect data and send control signals to regulate the level of charge going into an electric vehicle, is the backbone for the project. The demonstration will collect data such as vehicle identification, status of charge, battery temperature, power usage in kW, voltage, amperage, and power quality variables, such as active and reactive power to assess performance. The control signals will connect and disconnect a charger based on various inputs, such as grid capacity, user preferences, time of use, demand response events, etc. The Recipient's artificial intelligence-based control system will determine the optimized charging and/or backfill operations. The project will use simulations and emulations to provide useful results for Investor Owned Utilities to integrate in their planning processes.		Yes	Demand-side Management	\$1,989,432	\$1,989,432
2012-2014 Triennial Investment Plan	CEC	Smart Charging of Plug- in Vehicles with Driver Engagement for Demand Management and Participation in Electricity Markets	Technology Demonstration and Deployment	This project will develop an aggregation system for smart charging PEV vehicles to provide demand response, mitigate demand charges, leverage time of use rates, and offer wholesale market services. The demonstration will tap into the inherent flexibility in the time and rate of PEV charging to participate in PG&E's automated demand response programs, and CAISO wholesale markets for demand response and ancillary services. A charging control system will be applied to a fleet of vehicles owned by Alameda County and to charging stations that are used by both county vehicles and the public. The project will add systems for intelligent prediction of PEV loads and control algorithms to create a flexible, modular, and scalable solution for smart charging county fleet and public PEVs.	4/8/2015	Yes	Demand-side Management	\$1,993,355	\$1,993,355

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2012-2014 Triennial Investment Plan	CEC	Laguna Subregional Wastewater Treatment Plant Microgrid	Technology Demonstration and Deployment	This project will upgrade an existing wastewater treatment plant to act as a microgrid with the ability to provide ancillary services to the grid. The project team will then monitor the plant as it operates, gathering data for microgrid operations.	4/8/2015	Yes	Distribution	\$4,999,804	\$4,999,804
2012-2014 Triennial Investment Plan	CEC	Borrego Springs - A Renewable-Based Community Microgrid	Technology Demonstration and Deployment	SDG&E and the project team will demonstrate a utility owned community microgrid at Borrego Springs. The renewable based microgrid will be able to island the entire community with a peak load of approximately 14 MW serving approximately 2,500 residential and 300 commercial and industrial customers. SDG&E will utilize two large PV systems, 14 rooftop PV systems, two substation batteries and three distributed batteries.	4/8/2015	Yes	Distribution	\$4,724,802	\$4,724,802
2012-2014 Triennial Investment Plan	CEC	Learning from Real- World Experience to Understand Renewable Energy Impacts to Wildlife	Applied Research	The goal of this research is to use real-world data to understand renewable energy impacts to wildlife. The approach will be to analyze observed wildlife stalities and habitat loss to determine the significance of fatalities to population persistence; compare pre-construction predicted and post-construction actual impacts (fatalities) to sensitive species, as a foundation for improving predictive accuracy; and compare predicted and actual benefits of mitigation to sensitive species, as a foundation for improving predictive accuracy. The research goal is to produce a set of decision-making tools for renewable energy developers and permitting and regulatory agencies in California. Implementation of this set of tools will benefit ratepayers by streamlining permitting and reducing costs of energy development and electricity.	6/10/2015	Yes	Generation	\$1,000,000	\$1,000,000
2012-2014 Triennial Investment Plan	CEC	Bringing Energy Efficiency Solutions to California's Water Sector With the Use of Customized Energy Management System and Supervisory Control and Data Acquisition System	Technology Demonstration and Deployment	This project will demonstrate and deploy energy management and supervisory control and data acquisition (SCADA) system strategies that can improve energy efficiency while reducing peak loads and electricity costs in the delivery and treatment of water in California. This new system will use the existing SCADA system without disrupting current operations. This project will involve water agencies that pump ground water and surface water, and that handle reclaimed water, in large, medium, and small quantities.	5/13/2015	Yes	Demand-side Management	\$3,017,034	\$3,017,034

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2012-2014 Triennial Investment Plan	CEC	Advance Wastewater Treatment Using Forward Osmosis to Produce High Quality Water	Technology Demonstration and Deployment	This project will demonstrate an advanced water treatment technology that produces high quality water while reducing energy, chemicals and maintenance required for treatment of industrial waste waters. The project includes technological advancements in membrane development and module design in forward osmosis to address cost and performance issues. The demonstration projects will occur at a winery, frozen food facility and a soap company. Each demonstration will document energy savings and potential for this technology to purify, concentrate and reuse challenging wastewaters that contains high levels of contaminants. This technology has the potential for application in the food and beverage, oil and gas, and other industrial sectors.	5/13/2015	Yes	Demand-side Management	\$3,230,420	\$3,230,420
2012-2014 Triennial Investment Plan	CEC	Aerosol impacts on the hydrology and hydropower generation in California	Applied Research	This project will develop a fully coupled aerosol-meteorology-snowpack forecast model for hydropower applications, using observational datasets (precipitation, snowpack, stream inflow) for Southern California Edison's hydropower plant on Big Creek. The researchers will also use a SCE model designed to optimize the operation of their hydropower units. The main goal is to demonstrate that the use of advanced forecasts can improve the management of hydropower units.	5/13/2015	Yes	Generation	\$399,818	\$399,818
2012-2014 Triennial Investment Plan	CEC	Demonstration of Forward Osmosis to Produce Juice Concentrate, Purify and Reuse Wastewater and Reduce Energy Use	Technology Demonstration and Deployment	This project will demonstrate a new technology innovation to reduce the energy, chemicals, and maintenance required for food and beverage processing and waste concentration. The technology uses forward osmosis and reverse osmosis in an energy efficient way to achieve the equipment performance of an evaporator and that, in addition, generates purified water streams for reuse. When designed and implemented correctly, the technology can save energy and money.	5/13/2015	Yes	Demand-side Management	\$2,499,289	\$2,499,289
2012-2014 Triennial Investment Plan	CEC	High-Performance Integrated Window and Facade Solutions for California Buildings	Applied Research	To develop, validate and quantify energy impacts of a new generation of high performance façade systems and provide the design and management toolkits that will enable the building industry to meet challenging energy performance goals leading to net zero buildings by 2030. Building envelope technologies can be integrated into a cost-effective system that reduces energy-use associated with HVAC and lighting while improving occupant comfort. Technology development activities include highly insulating (Hi-R) windows, energy recovery-based envelope ventilation systems, and dynamic daylight redirecting systems. Supporting tools, data, and design methods will also be developed to enable widespread, reliable, cost-effective deployment throughout California.	5/13/2015	Yes	Demand-side Management	\$3,000,000	\$3,000,000

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Improving Hydrological Snowpack Forecasting for Hydropower Generation Using Intelligent Information Systems	Applied Research	The purpose of this project is to develop improved snowpack forecasts within a representative Sierra Nevada watershed in order bolster the hydrographic data network that supports hydropower planning and operations. The project is expected to reduce uncertainty in water forecasts in a changing climate, and assist in the development of reliable and flexible operations of hydropower dams that will also bring economic benefits to utilities and ratepayers.	5/13/2015	Yes	Generation	\$1,100,000	\$1,100,000
2012-2014 Triennial Investment Plan	CEC	Evaluation of Cost, Performance and Water Conserving Capability of Hybrid Cooling	Applied Research	This project will analyze the design, performance and cost of optimized hybrid cooling systems at utility power plant scale to illustrate the potential benefits of hybrid cooling in California. This project will use an existing Excel spreadsheet-based computational tool with the capability of specifying, at an "engineering-level", design parameters for optimized closed-cycle wet, direct dry and parallel wet/dry hybrid cooling systems. The tool's output will be checked against information from participating plants equipped with wet, dry and hybrid cooling systems. The capability to make rigorous, reliable evaluations of hybrid cooling systems and the trade-offs between economic power production and water resource conservation will enable the selection of preferred cooling systems for the economic and environmental benefit of California.	5/13/2015	Yes	Generation	\$581,580	\$581,580
2012-2014 Triennial Investment Plan	CEC	Develop Analytical Tools and Technologies to Plan for and Minimize the Impacts of Climate Change on the Electricity System	Applied Research	The purpose of this agreement is to advance the understanding of key parameters of long-term energy scenarios and greenhouse gas abatement options in the California energy system. This project will achieve this by further developing scenarios and modeling capabilities of the California electricity sector, as well as interactions between the electricity sector and other sectors, and by exploring the implications of particular policy choices on the electricity system in the medium (2020-2030) and long term (2050). This project will provide critical insight into some of the key challenges facing the low carbon transition in the electricity system, the options for addressing these challenges, and the dynamic interactions among these options, which are likely to grow more important over time. In addition, this project will develop new insights into critical research areas pertaining to long-term energy scenarios for California.	5/13/2015	Yes	Grid Operations/Market Design	\$700,000	\$700,000
2012-2014 Triennial Investment Plan	CEC	Wexus Energy and Water Management Mobile Software for the Agricultural Industry	Technology Demonstration and Deployment	This project will deploy the Wexus (Water-Energy Nexus) mobile, cloud-based software platform into California's agricultural industry. The Wexus platform leverages existing utility meter infrastructure and helps agribusinesses to quickly assess energy (and water) usage and cost from virtually anywhere on any mobile device. Through customized alerts and reporting, the platform allows farms to quickly respond to changes in energy usage, adjust and optimize equipment in the field, and reduce operational expenses due to energy costs. Through collaboration with project partners, this project will further extend existing water-energy data analysis, visualization and remote controlling capabilities to the Wexus platform to further optimize water-energy resource management in the agribusiness sector.	5/13/2015	Yes	Demand-side Management	\$4,000,000	\$4,000,000

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2012-2014 Triennial Investment Plan	CEC	Rotor-Mounted Bat Impact Deterrence System Design and Testing	Applied Research	The project will design, lab test, and field test a new bat deterrence system utilizing ultrasound transmitters mounted in an array along the rotor blades, providing complete coverage over the entire rotor/nacelle envelope. A field test study utilizing substantially similar methods to prior bat impact studies will be implemented post-installation at the test site to measure the effectiveness of the new ultrasound system.	5/13/2015	Yes	Generation	\$862,875	\$862,875
2012-2014 Triennial Investment Plan	CEC	Building a Healthier and More Robust Future: 2050 Low Carbon Energy Scenarios for California	Applied Research	This project will significantly expand prior studies using stochastic modeling capabilities of the electricity system, simulating more comprehensive demand response options, and more realistic PEV modeling. The project will also include more realistic simulations of the potential for energy efficiency and consider the impacts of climate change on energy resources.	5/13/2015	Yes	Generation	\$700,000	\$700,000
2012-2014 Triennial Investment Plan	CEC	Monitoring the Urban Heat Island Effect and the Efficiency of Future Countermeasures	Applied Research	This project will improve understanding of the distribution of near-surface air temperatures within urban heat islands in California, identify and quantify the determinants of local temperatures, and enhance the foundation for location-specific assessments of mitigation strategies. In collaboration with local governments and organizations in the Los Angeles Basin, the research team will design and implement a network of fixed monitoring stations, supplemented with mobile monitoring and data from existing weather-station networks. This research will (a) assess spatial and temporal variations in near-surface air temperature; (b) monitor the effects of urban heat island countermeasures, such as cool surfaces and urban vegetation, on urban air temperature; and (c) recast these observations for use in validating and calibrating the climate/meteorological models applied to assess potential benefits of urban heat island countermeasures throughout the state.	5/13/2015	Yes	Grid Operations/Market Design	\$500,000	\$500,000

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?		Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Building a Climate Change Resilient Electricity System for Meeting California's Energy and Environmental Goals	Applied Research	The project will utilize climate change simulations to produce modeled conditions that disrupt electricity system generation, renewable capacity potential, and demand for the years of 2030, 2040, and 2050. The combined effect of these impacts then will be simulated on the electricity system using an integrated electric grid modeling platform.	5/13/2015	Yes	Generation	\$698,792	\$698,792
2012-2014 Triennial Investment Plan	CEC	Unlocking Industrial Energy Efficiency Through Optimized Energy Management Systems	Technology Demonstration and Deployment	The University of California at Berkeley, Massachusetts Institute of Technology, and the University of Chicago, have partnered with Lightapp Technologies to demonstrate a pre-commercial, software-based, optimized energy management system in industrial facilities. The Lightapp technology takes an innovative approach by relating electricity use and operating measurements to the production outputs of specific facility systems. The software tool then identifies anomalies and makes recommendations to lower the overall energy intensity of production and save energy and money. This project will demonstrate the operational effectiveness and financial viability of deploying a more developed version of the technology in California industries. This project will focus on optimizing electricity consumption in compressed air systems, a common system in many industries.	5/13/2015	Yes	Demand-side Management	\$4,981,729	\$4,981,729
2012-2014 Triennial Investment Plan	CEC	Raw Wastewater Filtration to Increase Organic Remove Efficiency and Achieve Significant Electrical Savings	Technology Demonstration and Deployment	This project will extend the application of Cloth Depth Filters (CDF) to raw wastewater filtration at three wastewater treatment plants in California. The CDF concept replaces the current technology of primary clarification by offering the following advantages: (1) substantially higher removal of organic load resulting in significantly lower aeration electrical power demand, and (2) smaller footprint requirements both for primary and secondary treatment steps. CDF employs established principles of gravitational forces which results in minimal operational and maintenance complexities. The unique attribute which offers promise for CDF technology in raw wastewater is the vertical placement of the filter medium and flow direction of this filtration process. Unlike prevailing filtration systems, the vertical orientation of the filter medium permits heavy solids to settle within the tank.	5/13/2015	Yes	Demand-side Management	\$3,476,085	\$3,476,085

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Enable Standardized Vehicle-Grid Integration through Development of Universal Standard	Applied Research	The project will design and develop a Demand Clearing House (DCH) to monitor published energy pricing from the California Independent System Operator's Fifteen-Minute Energy Market as well as load forecasts from San Diego Gas & Electric and other participating utilities through an Application Programming Interface translation from Open ADR 2.0b, a Demand Response protocol used by all California Investor Owned Utilities. The DCH will then use algorithms that convert grid conditions into ISO/IEC 15118 "grid profiles," or Tariff Tables, which in turn will be communicated to 15118-capable charging stations and vehicles. The DCH will allow utilities to respond to supplemental energy market prices, proving a viable and scalable pathway toward using plug-in electric vehicles to manage variable grid conditions, solar oversupply, and other system wide challenges.	6/10/2015	Yes	Grid Operations/Market Design	\$1,499,999	\$1,499,999
2012-2014 Triennial Investment Plan	CEC	Next-Generation Grid Communication for Residential PEVs	Applied Research	The project will develop communication interfaces between PEV customers and utilities using cloud-to-cloud OpenADR 2.0b communication with a vehicle charging network and will leverage emerging means for retrieving vehicle information via the ISO/IEC 15118 standard for consideration in the decision process. The communication will be able to gather customer data and receive signals from a third party (utility) for the purpose of optimizing PEV charging in a mutually beneficial manner to the customer and the utility. In addition to investigation and implementation of the ISO/IEC 15118 standard, the project will also investigate using control methods that do not require having vehicle charging information. This may be done through statistical estimation, rate of charge output from charging stations or driver opt-in based on maximum charge needed.	6/10/2015	Yes	Demand-side Management	\$1,500,000	\$1,500,000
2012-2014 Triennial Investment Plan	CEC	Assessing the Ability of Smart Inverters and Smart Consumer Devices to Enable more Residential Solar Energy	Applied Research	The purpose of this project is to resolve the limiting conditions that occur on California distribution systems when many PV systems are installed behind a single residential distribution transformer by evaluating advanced inverter functionality with specific goal of enabling higher penetration of photovoltaic on the grid. The project will identify, implement, and test (both in lab and field) optimal methods by which smart inverters can mitigate the issues that otherwise would limit local high penetrations of residential PV. The process will identify how California Rule 21 functions can be used and configured so that multiple smart inverters work in harmony (supporting one another actions) and will also identify how other naturally-occurring consumer devices, such as electric vehicle chargers and other smart loads, can serve to further enable high-levels of solar PV.	6/10/2015	Yes	Grid Operations/Market Design	\$1,705,487	\$1,705,487

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Renewable Microgrid for a Medical Center	Technology Demonstration and Deployment	This project consists of a full-scale demonstration of a renewable-based microgrid for a hospital. The microgrid consists of a solar photovoltaic array, battery energy storage, and a microgrid controller integrated with an existing combined heat and power system. The microgrid will provide at least three hours of power during a utility outage and will also use automated demand response to reduce electrical demand.	6/10/2015	Yes	Distribution	\$4,776,171	\$4,776,171
2012-2014 Triennial Investment Plan	CEC	Irrigation Optimization and Well Pump Monitoring to Reduce Energy and Water Consumption		This project will demonstrate a software tool that links groundwater extraction with smart meter data to provide growers with automated information on energy and water consumption. This data is augmented by weather data and optional soil moisture data from local sensors to provide information to growers regarding irrigation needs. Use of the software program could help inform growers and reduce irrigation while maintaining or optimizing yield. The technology will be applied to over 1,579 acres of farms owned by several growers of alfalfa, tomato, pistachios and almonds.	6/10/2015	Yes	Demand-side Management	\$2,292,829	\$2,292,829
2012-2014 Triennial Investment Plan	CEC	Advancing Biomass Combined Heat and Power Technology to Support Rural California, the Environment, and the Electrical Grid	Technology Demonstration and Deployment	This project will deploy a biomass-fired combined heat and power system to provide heat and power to Plumas County health facilities and to dormitories at Feather River College. Biomass from local forest clearing operations will be used by a new biomass boiler to supply heat to an Organic Rankine Cycle (ORC) power unit. Waste heat from the ORC will be piped to all buildings to provide source heat for heat pumps, improving their performance for the winter heating season. New heat pumps will be deployed in dormitories to replace existing propane/electric resistance heaters.	6/10/2015	Yes	Generation	\$2,603,228	\$2,603,228
2012-2014 Triennial Investment Plan	CEC	College of San Mateo Internet of Energy	Technology Demonstration and Deployment	This project aims to demonstrate an integrated solar PV, energy storage, and advanced power electronics within a single module to significantly increase overall efficiencies by minimizing conversion losses. The demonstration will include the integration of a 200 kW pre-commercial high-performance PV system from SunEdison, a 200 kWh stationary battery energy storage system, and advanced HVAC system and controls, with advanced energy management system that uses the Internet of Energy concept to optimize performance of distributed energy resources and the local grid.	6/10/2015	Yes	Generation	\$2,999,601	\$2,999,601

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$)	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	ABEC #4 Renewable Combined Heat and Power Project	Technology Demonstration and Deployment	The project will use biogas derived from on-site dairy manure to generate low-carbon, renewable electricity and achieve high overall efficiency by capturing waste heat from the power generation system, and using it to drive an absorption chiller. The absorption chiller will convert waste heat into chilling capacity, which will be used to chill milk produced by the dairy cows. New absorption chiller capacity will directly offset electricity consumption from existing electric chillers.	6/10/2015	Yes	Generation	\$3,000,000	\$3,000,000
2012-2014 Triennial Investment Plan	CEC	Demonstration of community scale low cost highly efficient PV and energy management system	Technology Demonstration and Deployment	This project will demonstrate that the combination of advanced PV generation and an energy management system can reduce the community's average daily power and daily peak energy demand by more than 10%. The project includes a smart electrical energy storage system that integrates retired electric evhicle batteries. The generator and storage system will be controlled by a commercial-grade microgrid controller, with the three levels of hierarchy. The demonstration site is located in the Robert Mondavi Institute at the UC Davis campus.	6/10/2015	Yes	Generation	\$1,238,491	\$1,238,491
2012-2014 Triennial Investment Plan	CEC	Distribution System Aware Vehicle to Grid Services for Improved Grid Stability and Reliability	Applied Research	The project will develop an integrated vehicle-to-grid (V2G) system that can be tested and demonstrated to be distribution-aware, self-regulating, interoperable, secure and open as well as scalable and flexible. These real-world tests and demonstrations will provide confidence in the V2G systems that provide grid support functions and possibly influence investor owned utilities (IOUs) to add them to their Assembly Bill 2514 Storage Mandate compliance plans. The data gathered will also enable validation of cost effectiveness models through direct engagement with the IOUs' existing infrastructure and distribution networks, combined with simulated independent system operator interaction.	6/10/2015	Yes	Grid Operations/Market Design	\$1,499,977	\$1,499,977
2012-2014 Triennial Investment Plan	CEC	Demonstration of Low- Cost Liquid Cooling Technology for Data Centers	Technology Demonstration and Deployment	This project will validate the performance, reliability, cost savings and payback of a data center efficiency technology that uses direct-to-chip liquid-cooling to cut data center cooling energy use. The technology will be demonstrated at two full scale data center installations and the deployment will occur with minimal operational disruptions during installation. Energy consumption, load, reliability and server performance will be monitored. The results of the demonstrations, along with "lessons learned", will be made broadly available to the data center community and public-policy makers to stimulate adoption of this technology.	6/10/2015	Yes	Demand-side Management	\$3,552,678	\$3,552,678

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2012-2014 Triennial Investment Plan	CEC	Demonstration of Community Scale Generation System at the Chemehuevi Community Center	Applied Research	This project will deploy and demonstrate a community energy generation system at the Chemehuevi Indian Tribe Community Center. The energy system will incorporate two pre-commercial solar technologies with flow-battery energy storage integrated with energy management system. The integration of the energy management system components will reduce peak energy demand for the center by utilizing battery storage to shift building and community loads and provides an uninterruptable power for the center when it is used as an Emergency Response Center for the tribe.	10/14/2015	Yes	Distribution	\$2,588,906	\$2,588,906
2012-2014 Triennial Investment Plan	CEC	Climate appropriate HVAC Systems for Commercial Buildings to Reduce Energy Use and Demand	Applied Research	This project will develop and demonstrate a Climate Appropriate Air Conditioning system that could cut the energy required to cool and heat commercial buildings. The heart of this system is an intelligent HVAC controller that processes signals from building sensors and system feed-back to maximize system efficiency. This control system will manage two technologies to optimize overall building energy and peak demand reduction. Getting fresh air into commercial buildings is a code requirement. However, the ingress of hot air into a cooling system (or cold air into a heating system) presents an inefficiency problem. Two technologies to increase the efficiency of fresh-air intake: heat-recovery ventilation (HRV) and indirect evaporative cooling (IEC) are used in this project to decrease the temperature of the incoming air in the summer and increase it in the winter. Both technologies can be intelligently controlled by the building controller to reduce cooling and heating costs.	7/8/2015	Yes	Demand-side Management	\$2,834,721	\$2,834,721
2012-2014 Triennial Investment Plan	CEC	Potential Impacts and Adaptation Options for the Electricity System from Sea Level Rise in the San Diego Area.	Applied Research	The project will evaluate SLR vulnerability and adaptation options at a level of detail appropriate for informing electricity sector policy and planning. ICF International will partner with SDG&E to conduct a detailed, robust, sea level rise vulnerability assessment and to identify and evaluate appropriate adaptation measures. Detailed sea level rise inundation modeling that builds on previous studies will be used to identify the SDG&E infrastructure that will be exposed to coastal flooding, and assess how the electricity system could be affected. Impacts of coastal inundation, and possible adaptation measures, will be determined using literature reviews, interviews with key experts, modeling and workshop elicitation. Potential direct and indirect impacts will be used at an asset by asset level, and through system-wide assessment including power flow modeling to support Value of Lost Load analysis	10/14/2015	Yes	Generation	\$499,929	\$499,929

Investment Program Period		Project Name	Project Type	A brief description of the project	Date of the award	Was this project awarded in the immediately prior calendar year?		Funding Amount	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Modeling the Impact of Wildfires on California's Transmission and Distribution Grid	Applied Research	This study will advance scientific knowledge by combining and enhancing several state-of-the-art models to produce the most detailed analysis to-date of California's tuture electric grid and fire risk under alternative conditions of climate change and grid evolution, including changes in the use of demand response, renewables, and distributed generation.	10/14/2015	Yes	Distribution	\$500,000	\$500,000
2012-2014 Triennial Investment Plan	CEC	Climate Change in Los Angeles County: Grid Vulnerability to Extreme Heat	Applied Research	This project will develop a sophisticated and in depth description of future electric grid demand, response, and vulnerability due to increased (and prolonged) heat events in Southern California Edison territory under current and future climate scenarios. It will enable innovative grid management and operation strategies and will identify adaptation guidance. Ultimately, researchers will provide the information to local governments, regional and state agencies, utilities, and the general public in tangible, easy-to-understand formats to enhance local and state capacity to respond to potential disruptions in transmission due to climate change.	10/14/2015	Yes	Distribution	\$500,000	\$500,000
2012-2014 Triennial Investment Plan	CEC	Visualizing Climate- Related Risks to the Electricity System using Cal-Adapt	Applied Research	This project develops a suite of analytical and outreach approaches to provide electricity system stakeholders with actionable data pertaining to local climate risks. The project is organized around three technical tasks. The first is developing interactive, visually compelling, and useful web-based visualization applications depicting climate-related risks to the electricity infrastructure. The second is to build focused toolsets to support planning to protect energy infrastructure. Finally, the project includes outreach and training with energy stakeholders, climate practitioners, planners, managers, educators and ratepayers in the state through targeted workshops, webinars, and presentations.	11/12/2015	Yes	Grid Operations/Market Design	\$400,000	\$400,000

Investment Program Period	Program Administrator	Project Name	Project Type	A brief description of the project	award	Was this project awarded in the immediately prior calendar year?	Assignment to Value Chain	Funding Amount	Committed Funding Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Standards and Efficiency (WISE)	Market Facilitation	This project will provide education, tools and on-the-job training to homebuilders in California's residential construction market on High Performance Attics (HPAs) and High Performance Walls (HPWs), two new requirements in California's Building Energy Efficiency Standards for 2016. The project will help homebuilders better understand the new requirements and options for compliance, as well as provide technical support to enable the transition to the new requirements. Additionally, the project team will provide on-the-job training to homebuilders, installing trades, subcontractors and field crews on the proper installation of insulation and changes to other building systems that will be necessary to meet the new requirements.	11/12/2015		Demand-side Management	\$4,431,918	\$4,431,918
2012-2014 Triennial Investment Plan	CEC	Expanding Energy- Related Career Pathways in the Electrical Industry: Increasing Workforce Development Opportunities in Disadvantaged Communities and Delivering Training on Automated Demand Response Communication	Market Facilitation	The project will recruit workers from disadvantaged communities into an apprenticeship program, and provide them with comprehensive classroom and on-the-job training on the installation and maintenance of AutoDR communications equipment. The project will pilot a new California Advanced Lighting Controls Training Program course focused on installation and maintenance of AutoDR communications equipment for lighting applications. In addition, this project will recruit small and medium buildings located in disadvantaged communities to serve as on-the-job training sites for the apprentices enrolled in the program.	11/12/2015		Demand-side Management	\$4,476,189	\$4,476,189
2012-2014 Triennial Investment Plan	CEC	Isothermal Compressed Air Energy Storage with Solar and Load Forecasting Integration	Applied Research	LightSail Energy, along with its partner, the University of California San Diego (UCSD), will design build, operate, monitor, and analyze an I-CAES system on the Eliot Field PV station owned by UCSD. The energy storage system will be a pilot unit for testing the capabilities and performance potential of I-CAES for load following and ancillary services, as well as renewables integration. The project will also gather data needed to reduce the cost of I-CAES, increase its efficiency, and support its incorporation into the California electric grid. The installed energy storage system will be capable of charging from both the installed PV on site and the electric grid (operated by SDG&E) and will be capable of 200kW of discharging power and will store up 800kWh of energy (or 4 hours of discharge at nominal power).	12/9/2015	Yes	Distribution	\$1,200,276	\$1,200,276

Program Period	Administrator	Project Name	Project Type		award	project awarded in the immediately prior calendar year?	Value Chain	Funding Amount	Amount (\$)
2012-2014 Triennial Investment Plan	CEC	Improving Membrane Treatment Energy Efficiency through Monitoring the Removal of Colloidal Particle Foulants	Technology Demonstration and Deployment	The purpose of this Agreement is to demonstrate a technology that directly measures the colloidal particle concentration and size in treated wastewater prior to going through membranes that are used in water reclamation facilities. This will reduce energy use by identifying appropriate pre-treatment needed to minimize membrane fouling.	12/9/2015		Demand-side Management	\$1,167,034	\$1,167,034

Expended to date:Contract/	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead	Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism		awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$0	\$0	Clean Power Research Itron, Inc., dba IBS	\$453,462	31.22%		Pre-existing intellectual property identified in agreement EPC-14-001 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18
\$0	N/A	\$0	\$0	\$0		\$3,000,000	50.00%		Pre-existing intellectual property identified in agreement EPC-14-002 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18
\$39,962	N/A	\$39,962	\$198,528	\$0	Southern California Gas Company	\$300,000	16.69%		Pre-existing intellectual property identified in agreement EPC-14-003 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)		Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$377,870	N/A	\$377,870	\$283,080	\$0		\$19,038	1.25%	Grant	Pre-existing intellectual property identified in agreement EPC-14-004 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18
\$0	N/A	\$0	\$157,282	\$0	San Diego Gas & Electric Company Itron, Inc. UC San Diego, San Diego Supercomputer Center Strategen	\$999,984	50.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-005 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18
\$58,423	N/A	\$58,423	\$247,542	\$0		\$90,325	8.28%	Grant	Pre-existing intellectual property identified in agreement EPC-14-007 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18
\$0	N/A	\$0	\$168,624	\$0	Itron, Inc. NRG Energy, Inc.	\$764,019	43.31%	Grant	Pre-existing intellectual property identified in agreement EPC-14-008 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	18

Funds Expended to date:Contract/ Grant Amount (\$)		Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$450,466	\$0	Center for the Built Environment - UC Berkeley Price Industries	\$299,194	9.24%	Grant	Pre-existing intellectual property identified in agreement EPC-14-009 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$1,004,820	N/A	\$1,004,820	\$908,941	\$0	3M BEHR Metal Construction Association PPG Industries Saint-Gobain Tex-Cote Valspar	\$610,800	19.63%	Grant	Pre-existing intellectual property identified in agreement EPC-14-010 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$55,966	N/A	\$55,966	\$557,072	\$5,000	California Lighting Technology Center - UC Davis	\$5,000	0.17%	Grant	Pre-existing intellectual property identified in agreement EPC-14-011 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$560,000	N/A	\$560,000	\$563,439	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-012 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122

Expended to date:Contract/	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$595,177		Center for the Built Environment - UC Berkeley BAF Technologies Inc. Chirp Microsystems, Inc. Price Industries	\$249,000	9.09%		Pre-existing intellectual property identified in agreement EPC-14-013 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$822,245	N/A	\$822,245	\$495,365		EMerge Alliance California LMCC IBEW- NECA	\$100,000	9.09%		Pre-existing intellectual property identified in agreement EPC-14-015 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$416,550	N/A	\$416,550	\$228,148	\$0		\$265,000	20.95%		Pre-existing intellectual property identified in agreement EPC-14-016 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Ø	122

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split		Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$669,000	N/A	\$669,000	\$216,162	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-017 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$59,556	N/A	\$59,556	\$482,416	\$0	Electric Power Research Institute (EPRI)	\$901,944	47.42%	Grant	Pre-existing intellectual property identified in agreement EPC-14-019 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	38
\$9,326	N/A	\$9,326	\$1,072,105	\$0		\$322,281	9.72%	Grant	Pre-existing intellectual property identified in agreement EPC-14-021 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$19,270	N/A	\$19,270	\$32,107	\$0	Caterpillar Finanical Services Corporation	\$4,500,000	52.94%	Grant	Pre-existing intellectual property identified in agreement EPC-14-022 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23

Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)		and overhead costs to be incurred for each project	Funds	Partners	Match Funding	Funding Split		the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$691,504		Electric Power Research Institute, Inc. Eos Energy Storage, LLC ETM-Electromatic Inc Stem Inc	\$1,167,607	35.12%	Pre-existing intellectual property identified in agreement EPC-14-023 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	38
\$0	N/A	\$0	\$334,354		TSS Consultants West Biofuels, LLC Christiana Darlington Soper-Wheeler Co. LLC	\$539,914	21.26%	Pre-existing intellectual property identified in agreement EPC-14-024 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$8,422	N/A	\$8,422	\$157,497		PV Evolution Labs Sunfolding, Inc.	\$1,171,565	53.95%	Pre-existing intellectual property identified in agreement EPC-14-025 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$81,894	N/A	\$81,894	\$65,406		Regents of the University of California, Berkeley	\$150,784	29.48%	Pre-existing intellectual property identified in agreement EPC-14-026 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	12

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$206,222	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-027 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	38
\$20,076	N/A	\$20,076	\$105,570	\$0	Environ Strategy Consultants, Inc. Waste Management of California, Inc. InnoSepra, LLC	\$729,150	35.60%	Grant	Pre-existing intellectual property identified in agreement EPC-14-028 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$32,844	N/A	\$32,844	\$32,107	\$0	Caterpillar Finanical Services Corporation	\$5,000,000	55.56%	Grant	Pre-existing intellectual property identified in agreement EPC-14-029 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$331,939	N/A	\$331,939	\$670,276	\$0		\$46,616	3.01%	Grant	Pre-existing intellectual property identified in agreement EPC-14-030 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

Funds Expended to date:Contract/ Grant Amount (\$)	Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Funding Split	Funding Mechanism		the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$424,149		\$424,149	\$98,402		The Regents of the University of California - Irvine Environ Strategy Consultants, Inc. Ener-Core, Inc.	\$438,345	22.62%		Pre-existing intellectual property identified in agreement EPC-14-031 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$24,841	N/A	\$24,841	\$10,681	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-032 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	12
\$1,923,161	N/A	\$1,923,161	\$87,680	\$0	TSS Consultants The Watershed Research and Training Center North Fork Community Development Council Phoenix Energy Yosemite Sequoia Resource Conservation and Development Council Western Energy Systems USDA Forest Service - Sierra National Forest	\$1,179,216	19.19%		Pre-existing intellectual property identified in agreement EPC-14-033 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23

date:Contract/	Expended to	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$275,255	N/A	\$275,255	\$264,400	\$0		\$4,627,400	69.82%		Pre-existing intellectual property identified in agreement EPC-14-034 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$594,424	N/A	\$594,424	\$375,000	\$0		\$25,000	2.44%		Pre-existing intellectual property identified in agreement EPC-14-035 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$0	N/A	\$0	\$162,005		Olivine, Inc. SunSpec Alliance Solar City Corporation	\$2,066,875	50.82%	Grant	Pre-existing intellectual property identified in agreement EPC-14-036 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$60,067	N/A	\$60,067	\$166,993	\$0	Renovate America	\$214,000	26.29%	Grant	Pre-existing intellectual property identified in agreement EPC-14-037 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	12
\$46,680	N/A	\$46,680	\$40,208	\$0	Indicia Consulting California State Universtiy San Marcos	\$52,500	8.37%	Grant	Pre-existing intellectual property identified in agreement EPC-14-038 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	12
\$58,882	N/A	\$58,882	\$107,714	\$0	Pacific Gas and Electric Company	\$100,000	20.88%	Grant	Pre-existing intellectual property identified in agreement EPC-14-039 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	12
\$82,685	N/A	\$82,685	\$67,377	\$0	United States Department of Energy	\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-040 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

	Expended to	Funds Expended to date: Total Spent to date (\$)		Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$11,858	N/A	\$11,858	\$0	\$0	Veolia North America	\$0	0.00%		Pre-existing intellectual property identified in agreement EPC-14-041 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$1,928,853	N/A	\$1,928,853	\$1,497,504	\$0		\$1,500,000	25.86%		Pre-existing intellectual property identified in agreement EPC-14-044 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$437,426	N/A	\$437,426	\$188,248	\$0		\$46,616	3.02%		Pre-existing intellectual property identified in agreement EPC-14-045 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

Funds Expended to date:Contract/ Grant Amount (\$)		Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$54,169	N/A	\$54,169	\$323,906	\$0		\$2,630,000	63.73%	Grant	Pre-existing intellectual property identified in agreement EPC-14-046 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$91,348	N/A	\$91,348	\$98,501	\$0	Southern California Gas Company (SoCalGas)	\$600,000	28.64%	Grant	Pre-existing intellectual property identified in agreement EPC-14-047 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27
\$266,163	N/A	\$266,163	\$73,475	\$0	City of Fremont Delta Products Corporation Microgrid Energy	\$657,260	26.55%	Grant	Pre-existing intellectual property identified in agreement EPC-14-050 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$556,538	N/A	\$556,538	\$463,311	\$0		\$477,550	19.35%	Grant	Pre-existing intellectual property identified in agreement EPC-14-051 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

Funds Expended to date:Contract/ Grant Amount (\$)	Expended to	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$252,977	\$0	Organic Energy Solutions	\$7,772,939	60.85%		Pre-existing intellectual property identified in agreement EPC-14-052 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	23
\$0	N/A	\$0	\$276,825		Maxwell Technologies AMERICAN HONDA MOTOR COMPANY, INC. Regents of the University of California, Davis - California Lighting Technology Center Imergy Power Systems	\$1,797,544	38.95%	Grant	Pre-existing intellectual property identified in agreement EPC-14-053 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$0	N/A	\$0	\$832,908		Humboldt State University Foundation, Schatz Energy Research Center Pacific Gas and Electric Company Siemens Energy and Automation, Inc. Tesla Motors Blue Lake Rancheria GHD, Inc.	\$1,318,422	20.87%		Pre-existing intellectual property identified in agreement EPC-14-054 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40

Expended to	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead costs to be incurred for each project	Funds	Partners	Match Funding	Funding Split	. ,		If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$260,719	\$0	Chabot-Las Positas Community College District Imergy Power Systems	\$450,000	22.81%	Pre-existing intellectual property identified in agreement EPC-14-055 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$54,133	N/A	\$54,133	\$358,770		City of Santa Monica Korea Institute of Energy Research (KIER) California Lithium Battery Proximetry	\$500,000	20.08%	Pre-existing intellectual property identified in agreement EPC-14-056 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$583,530	N/A	\$583,530	\$812,829		Bay Area Climate Collaborative Regents of the University of California, Berkeley Kisensum Inc. ChargePoint, Inc. County of Alameda, General Services Agency	\$536,761	21.21%	Pre-existing intellectual property identified in agreement EPC-14-057 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$187,080	\$0	City of Santa Rosa Alstom	\$2,210,000	30.65%	Grant	Pre-existing intellectual property identified in agreement EPC-14-059 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$0	N/A	\$0	\$923,165	\$0	San Diego Gas & Electric Company SMA America OSISoft, LLC	\$1,739,560	26.91%	Grant	Pre-existing intellectual property identified in agreement EPC-14-060 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$0	N/A	\$0	\$262,924	\$0	US Geological Survey University of Maryland Center for Environmental Studies Appalachian Laboratory NextEra Energy	\$1,617,177	61.79%	Grant	Pre-existing intellectual property identified in agreement EPC-14-061 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$55,524	N/A	\$55,524	\$452,544	\$0	OSISoft, LLC Regents of the University of California, Riverside Campus Opto 22	\$1,722,732	36.35%	Grant	Pre-existing intellectual property identified in agreement EPC-14-062 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53

Funds Expended to date:Contract/ Grant Amount (\$)		Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split		Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$356,832	N/A	\$356,832	\$964,131	\$0	Porifera, Inc. CDM Smith, Inc. Dr. Bronner's Magic Soaps Wawona Frozen Foods Jackson Family Wines	\$646,493	16.68%	Grant	Pre-existing intellectual property identified in agreement EPC-14-063 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53
\$18,855	N/A	\$18,855	\$92,951	\$0	University of California, Riverside Jet Propulsion Laboratory- California Institute of Technology	\$306,237	43.37%	Grant	Pre-existing intellectual property identified in agreement EPC-14-064 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$361,472	N/A	\$361,472	\$621,536	\$0	Porifera, Inc. CDM Smith, Inc. Los Gatos Tomato	\$628,568	20.10%	Grant	Pre-existing intellectual property identified in agreement EPC-14-065 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53
\$550,000	N/A	\$550,000	\$1,308,746	\$450,000	United States Department of Energy	\$450,000	13.04%	Grant	Pre-existing intellectual property identified in agreement EPC-14-066 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$278,056	\$0	California Department of Water Resources University of California Merced	\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-067 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$34,351	N/A	\$34,351	\$0	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-068 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$76,814	N/A	\$76,814	\$286,936	\$0		\$0	0.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-069 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$585,111	N/A	\$585,111	\$571,397	\$0	Wexus Technologies, Incorporated	\$1,000,000	20.00%	Grant	Pre-existing intellectual property identified in agreement EPC-14-070 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53

Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead costs to be incurred for each project	Funds		Match Funding	Match Funding Split			selected, provide the number of bidders passing the initial pass/fail screening for project
\$57,391	N/A	\$57,391	\$29,547		Frontier Wind Bruce Walker	\$37,047	4.12%	Pre-existing intellectual property identified in agreement EPC-14-071 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$371,040	N/A	\$371,040	\$236,701		University of California, Berkeley	\$65,000	8.50%	Pre-existing intellectual property identified in agreement EPC-14-072 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$366,348	N/A	\$366,348	\$116,818	\$0	Altostratus, Inc.	\$4,000	0.79%	Pre-existing intellectual property identified in agreement EPC-14-073 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14

Funds Expended to date:Contract/ Grant Amount (\$)	Expended to	Funds Expended to date: Total Spent to date (\$)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$181,613	\$0	Southern California Gas Company (SoCalGas) Southern California Edison	\$300,000	30.04%		Pre-existing intellectual property identified in agreement EPC-14-074 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	14
\$0	N/A	\$0	\$451,253	\$0	University of California, Berkeley	\$1,530,590	23.50%		Pre-existing intellectual property identified in agreement EPC-14-075 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53
\$70,995	N/A	\$70,995	\$1,184,735		Kennedy/Jenks Consultants Water Environment Research Foundation Regents of the University of California (University of California, Davis) Aqua-Aerobic Systems, Inc. Process Wastewater Technologies LLC Linda County Water District	\$1,288,340	27.04%		Pre-existing intellectual property identified in agreement EPC-14-076 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead costs to be incurred for each project	Funds		Match Funding	Funding Split	Funding Mechanism		the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$49,059	N/A	\$49,059	\$193,033	\$0	KnGrid	\$100,000	6.25%		Pre-existing intellectual property identified in agreement EPC-14-077 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	25
\$0	N/A	\$0	\$139,418	\$0	ChargePoint, Inc.	\$142,500	8.68%		Pre-existing intellectual property identified in agreement EPC-14-078 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	25
\$21,188	N/A	\$21,188	\$400,537		Electric Power Research Institute, Inc. Sacramento Municipal Utility District Underwriters Laboratories, Inc. Southern California Edison Advanced Technology Organization Intwine Connect ClipperCreek, INC. Pentair A. O. Smith Corporate Technology Center Emerson Climate Technologies	\$891,414	34.33%		Pre-existing intellectual property identified in agreement EPC-14-079 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	27

Funds Expended to date:Contract/ Grant Amount (\$)		Funds Expended to date: Total Spent to date (\$)		Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$234,387	N/A	\$234,387	\$729,842	\$0	General Electric Power Systems OSISoft, LLC John Muir Health	\$2,095,835	30.50%	Grant	Pre-existing intellectual property identified in agreement EPC-14-080 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	40
\$181,070	N/A	\$181,070	\$332,162	\$0	UC Santa Barbara UC Davis PowWow Energy, Inc.	\$535,568	18.94%	Grant	Pre-existing intellectual property identified in agreement EPC-14-081 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53
\$29,293	N/A	\$29,293	\$262,813	\$0	Plumas County	\$652,400	20.04%	Grant	Pre-existing intellectual property identified in agreement EPC-14-082 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	22
\$15,277	N/A	\$15,277	\$136,927	\$0	SunEdison Inc. Growing Energy Labs, Inc. San Mateo County Community College District	\$2,315,960	43.57%	Grant	Pre-existing intellectual property identified in agreement EPC-14-083 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	22

Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	and overhead costs to be incurred for each project	Funds	Partners	Match Funding	Match Funding Split	Intellectual Property	the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$0	\$0		\$4,983,619	62.42%	Pre-existing intellectual property identified in agreement EPC-14-084 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	22
\$0	N/A	\$0	\$124,883		UC Davis OSISoft, LLC Solexel	\$658,729	34.72%	Pre-existing intellectual property identified in agreement EPC-14-085 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	22
\$11,905	N/A	\$11,905	\$666,988	\$0	Electric Power Research Institute (EPRI)	\$0	0.00%	Pre-existing intellectual property identified in agreement EPC-14-086 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	25
\$91,485	N/A	\$91,485	\$1,038,931		Lawrence Berkeley National Laboratory University of California, San Diego, San Diego Supercomputer Center Asetek USA, Inc.	\$1,519,738	29.96%	Pre-existing intellectual property identified in agreement EPC-14-088 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	Identification of the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$525,157		Primus Power Cogenra Solar, Inc. The Regents of the University of California - Riverside OSISoft, LLC Solexel Chemehuevi Indian Tribe	\$706,698	21.44%		Pre-existing intellectual property identified in agreement EPC-15-003 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	22
\$0	N/A	\$0	\$1,088,673	\$0	Electric Power Research Institute (EPRI)	\$440,509	13.45%		Pre-existing intellectual property identified in agreement EPC-15-004 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	122
\$0	N/A	\$0	\$240,425		San Diego Gas & Electric Company	\$166,200	24.95%		Pre-existing intellectual property identified in agreement EPC-15-005 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	13

Expended to	Funds Expended to date: In house expenditures (\$)	Spent to date (\$)	and overhead	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism		the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$169,786	\$0	University of Hawaii at Manoa	\$17,157	3.32%		Pre-existing intellectual property identified in agreement EPC-15-006 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	13
\$0	N/A	\$0	\$0		County of Los Angeles The Regents of the University of California, Los Angeles	\$183,753	26.87%		Pre-existing intellectual property identified in agreement EPC-15-007 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	13
\$0	N/A	\$0	\$74,324	\$0		\$0	0.00%		Pre-existing intellectual property identified in agreement EPC-15-008 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	13

Funds Expended to date:Contract/ Grant Amount (\$)	Funds Expended to date: In house expenditures (\$)	Funds Expended to date: Total Spent to date (\$)	and overhead	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism	Intellectual Property	the method used to grant	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0			BASF Owens Corning KB Home California Building Industry Association (CBIA) APA - Engineered Wood Association Bayer Material Science Ensoltis Green Hybrid Roofing Panasonic Eco Solutions North America PCBC QC Manufacturing Shea Homes SIPA - Structural Insulated Panel Association SPFA - Spray Polyurethane Foam Alliance Taylor Morrison Homes of California, LLC Tru Team of California		77.97%		Pre-existing intellectual property identified in agreement EPC-15-009 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	4
\$0	N/A	\$0	\$863,874	\$0	California LMCC IBEW- NECA	\$16,165,080	78.31%		Pre-existing intellectual property identified in agreement EPC-15-010 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	4
\$0	N/A	\$0	\$102,846	\$0	LightSail Energy	\$779,400	39.37%		Pre-existing intellectual property identified in agreement EPC-15-011 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	38

	ate: In house openditures (\$)		costs to be incurred for each project			Funding Split		used to grant awards	selected, provide the number of bidders passing the initial pass/fail screening for project
\$0	N/A	\$0	\$429,784	Orange County Water District West Basin Municipal Water District Evoqua Water Technologies	\$336,000	22.35%	Pre-existing intellectual property identified in agreement PON-14-304-302 (Confidential Products and Pre-Existing Intellectual Property Lists, Attachment C-2) will reside with the recipient. New intellectual property developed under this agreement will be subject to the agreement Terms and Conditions.	Competitive	53

If competitively selected, provide the name of selected bidder	selected, provide the rank of the selected bidder in the selection process	selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	
Itron, Inc., dba IBS	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will reduce resource scheduling uncertainty for California utilities and CAISO by improving solar forecasts, integrating those forecasts into enhanced net-load forecasts, and implementing the forecasts to quantify specific improvements and cost savings.	1c, 2a, 4a, 5c,
Geysers Power Company, LLC	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will result in the ratepayer benefits of greater electricity reliability and lower costs by determining if low carbon geothermal resources at the Geysers can cost-effectively be used to provide the flexible capacity needed to integrate renewable energy onto the grid.	1c, 1g, 3a, 3b, 3f, 3h, 4a, 5b, 5c,
University of California, Los Angeles	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will develop a low-cost thermal storage fluid, elemental sulfur, which enables overall low system costs, long lifetime, and scalability for a wide range of concentrating solar power applications.	2a, 3a, 3b, 3h, 4a, 4b,

If competitively selected, provide the	petitively selected, provide the If competitively If competitively		If interagency or	Does the recipient for this award identify as a	How the project leads to technological advancement or breakthroughs to overcome	Applicable Metrics
name of selected bidder	selected,	selected, explain why	sole source	California-based entity, small business, or	barriers to achieving the state's statutory energy goals	
	provide the	the bidder was not	agreement, specify	businesses owned by women, minorities, or		
	rank of the	the highest scoring	date of notification	disabled veterans?		
	selected bidder		to the Joint	uisableu veteraris :		
		bidder, explain willy a	Legislative Budget			
	in the selection	lower scoring bluder	Committee (JLBC)			
	process	was selected	was notified and			
			date of JLBC			
			authorization *			
Halotechnics	Ranked # 2	Funds were awarded	N/A	Small Business, Calif Based Entity,	The Halotechnics thermal storage system sought to improve system design and	1i, 2a, 3b,
		to passing proposals in			modularity and reduce the cost of molten salt energy storage by 25% by reducing the	
		rank order.			required storage volume.	
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The Regents of the University of	Ranked # 1	N/A	N/A	Calif Based Entity,	This project aims to improve solar energy forecast accuracy by 45% over the existing	5c,
California, San Diego					persistence forecast method to optimize the operation of distributed energy resources.	
					Doing so will mitigate the concerns of electric operations over the variable nature of solar	
					power that contributes to net load variability, causing voltage issues affecting service	
					quality and reliability.	
University of California - Davis	Ranked # 7	Funds were awarded	N/A	Calif Based Entity,	Improvements to accuracy of short-term (3-15 hours) and very short-term (0-3 hours) wind	1c, 3b, 5c,
		to passing proposals in			ramp forecasting would reduce generating reserves scheduled by grid operators, with	, ,
		rank order.			corresponding decreases in grid operating costs and greenhouse gas emissions, and,	
		raint ordon			simultaneously, increased grid reliability.	
					omandaricousty, moreasca grid renasmity.	
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The Regents of the University of	Donkod # F	Funda wara awarda -	NI/A	Calif Racad Entity	The project will develop and validate forecast models entimized for direct as	F.0
The Regents of the University of	Ranked # 5	Funds were awarded	N/A	Calif Based Entity,	The project will develop and validate forecast models optimized for direct normal	5c,
California, San Diego	1	to passing proposals in			irradiance (DNI), plane of array (POA) irradiance for large-scale concentrating solar power	
	1	rank order.			(CSP), concentrating photovoltaics (PV), and tracking PV power plants. The application of	
1	I	İ			big data and behavioral analysis will help optimize power plant operations.	
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If competitively selected, provide the name of selected bidder	If competitively selected, provide the rank of the selected bidder in the selection process	If competitively selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
The Regents of the University of California on behalf of the Berkeley campus	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	If successful, radiant systems radiant systems can be an integral part of ZNE and other advanced high performance buildings and reduce energy and peak energy use and cost compared to conventional systems.	1e, 1f, 1h, 4a,
Lawrence Berkeley National Laboratory	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Cool walls could increase building energy efficiency, saving money for ratepayers and reducing emissions from power plants. This would lower the risks of grid failure, loss of air conditioning, and morbidity/mortality on hot, sunny days. Cool walls will also reduce urban air temperatures, helping mitigate extreme heat events and air pollution episodes.	1e, 1f, 1h, 4a,
Regents of the University of California, Davis - California Lighting Technology Center	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project could improve understanding of metrics and test procedures associated with LED quality and performance, increase lamp manufacturer's ability to comply with future energy codes and standards and increase consumer acceptance and use of LED lamps.	1e, 1f, 1h, 3e, 4a,
Lawrence Berkeley National Laboratory	Ranked # 10	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The technologies and construction techniques studied could lead to electricity savings and peak demand savings and changes in future construction practices. There is potential for reductions of up to 50% in energy use relative to typical duct systems. Comfort is also increased because homes take less time to cool down to meet setpoints. For new construction, this performance improvement will contribute to achieving ZNE goals. The techniques can be applied to home retrofits with HVAC equipment.	1f, 1h, 4a,

	selected, provide the rank of the selected bidder	If competitively selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	
The Regents of the University of California on behalf of the Berkeley campus	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A		Improvements to accurate measurement of airflow coupled with being able to provide these measurements in a cost-effective manner would result in heating and cooling savings and improved air flow in buildings. Besides reducing HVAC energy use, improved airflows will also improve occupant comfort and extend equipment life.	1f, 1h, 4a,
Lawrence Berkeley National Laboratory	Ranked # 1	N/A	N/A		If the results from this project are promising, there is the potential for future DC powered building designs. A DC powered buildings could reduce energy use by 10% to 30% compared to a ZNE building with storage and or EV charging. It is estimated that a ZNE DC home could reduce site energy use by 20%, reduce PV size by 25%, and reduce the home energy cost by \$22,000.	1f, 1h, 3b, 4a,
BIRA Energy	Ranked # 11	Funds were awarded to passing proposals in rank order.	N/A		This project has the potential to lower utility costs, improve comfort, reduce carbon emissions through reduced energy use, and reduce peak electricity demand in new and existing homes. Pilot work has demonstrated that these approaches have the potential to be cost neutral. Assuming a market penetration of 73% of the current single-family, new construction market would potentially recoup the costs to ratepayers within a single year.	1f, 1h, 4a,

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Lawrence Berkeley National Laboratory	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	If the project is successful, it will accelerate the adoption of standardized lighting control systems and will help realize the California Lighting Action Plan goal of 60-80 percent reduction in lighting energy use by 2020. Estimated overall energy savings potential of advanced, networked lighting controls exceeds 20%, or about 1.5 TWh/year, after the technologies have been implemented in the commercial building stock.	1f, 1h, 4a,
Electric Power Research Institute (EPRI)	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This agreement will attempt to develop a "first of its kind" publically available tool that can determine the value of energy storage with respect to location, size, and type.	1c, 2a, 3a, 3b, 5b,
Electric Power Research Institute (EPRI)	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will develop a climate optimized HVAC system that includes advanced energy efficiency features. If successful, the technology could reduce electricity use, demand and costs, enhance occupant comfort, provide for fault detection and diagnostics to ensure continued optimal system performance, and allow the use of alternative refrigerants that reduce the potential for global warming.	1e, 1f, 1g, 1h, 4a,
ABEC #3 LLC, dba Lakeview Farms Dairy Biogas	Ranked # 1	N/A	N/A	Calif Based Entity,	The project will significantly reduce methane emissions and generate renewable electricity helping to achieve the State's GHG emission reductions and renewable electricity goals. The improved digester design will decrease dairy operating costs and provide valuable coproducts, such as nutrient-rich, more absorbable irrigation water. Further, this hub and spoke model, if successful, could lead to the development of more dairy digester biogasto-electricity projects.	3h, 4a, 4e,

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Eos Energy Storage, LLC	Ranked # 1	N/A	N/A		This demonstration will provide operational experience and data to better determine the value and cost savings of battery energy storage when interconnected to the grid.	1c, 1e, 1i, 2a, 3f, 3h, 4a, 4b, 5a, 5b,
West Biofuels, LLC	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	This project will reduce direct costs of utility-caused wildfire, protect utility infrastructure, preserve forest carbon sequestration, promote defensible communities, protect key watersheds, and lower size and intensity of wildfires.	1a, 1c, 2a,
Sunfolding Inc.	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	This project will result in ratepayer benefits of reduced cost of energy and increased energy supply reliability. The reduced cost of energy will be achieved by demonstrating a new type of ground mount tracker that adds 20-40% more power over fixed tilt systems at a cost that is well below the cost of current solar trackers. The increases in energy supply reliability will be achieved by delivering additional power that occurs in the late afternoons to the grid.	1e, 2a, 3b, 4a,
Regents of the University of California, Berkeley	Ranked # 1	N/A	N/A	Calif Based Entity,	Senate Bill 350 (De Leon, 2015) sets energy efficiency targets for 2030 and allows for the targets to be achieved, in part, from utility programs that provide financial incentives and rebates to their customers to increase energy efficiency. This project will examine opportunities to increase customer participation in utility efficiency programs in a cost-optimal manner.	1f, 1h, 5c,

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Regents of the University of California, Los Angeles	Ranked #3	Funds were awarded to passing proposals in rank order.	N/A		Compressed air energy storage may be a viable solution for long-term and large-scale storage applications. HTH-CAES potentially has lower capital and maintenance cost and less geographic restrictions than other storage technologies. In HTH-CAES technology, compressors are used to convert inexpensive off-peak electric power into compressed air and thermal reservoirs. Industry is interested if HTH-CAES can support large-scale power applications with low capital cost.	1c, 1e, 2a, 3h, 4a, 4b, 4c, 5b,
InnoSepra, LLC	Ranked # 10	Funds were awarded to passing proposals in rank order.	N/A		The project will help meet renewable fuel obligations at a lower cost by generating baseload renewable energy with a higher efficiency and a lower cost, lowering the cost of environmental compliance, and enabling utilization of marginal biogas sources for CHP applications using conventional natural-gas fired prime movers.	1a, 1b, 3c, 3g, 4a, 4b,
ABEC #2 LLC, dba West Star North Dairy Biogas	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will significantly reduce methane emissions and generate renewable electricity helping to achieve the State's GHG emission reduction and renewable electricity goals. The improved digester design will decrease dairy and digester operating costs while also enhancing the protection of groundwater. Other important benefits include: lowered manure handling costs and valuable co-products, such as nutrient rich, more absorbable irrigation water.	3h, 4a, 4e,
Lawrence Berkeley National Laboratory	Ranked # 8	Funds were awarded to passing proposals in rank order.	N/A		This analysis will: (1) identify high-priority areas within California and feedstock types for further public deployment funding, (2) highlight promising geographic areas or available technologies to encourage increased investment in waste biomass DG by the private sector, and (3) improve efficiency and reduce environmental burdens by helping to minimize biomass transportation distances and maximize the efficiency of power production and waste heat utilization.	3c, 3g, 4a,

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University of California, Irvine	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will demonstrate and deploy a novel gradual oxidation system in conjunction with a gas turbine that is capable of converting low-grade landfill biogas into renewable electricity.	1a, 1c, 1e, 1f, 1h, 2a, 3a, 3c, 3h, 4a, 4b, 5b,
Inova Energy Group, LLC	Ranked #3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Senate Bill 350 (De Leon, 2015) sets energy efficiency targets for 2030 and allows for the targets to be achieved, in part, from utility programs that provide financial incentives and rebates to their customers to increase energy efficiency. This project will help increase customer participation in utility efficiency programs by better understanding the social, cultural and behavior aspects of the Hispanic subpopulation that discourage or prevent their participation.	1f, 1h, 5c,
The Watershed Research and Training Center	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Women-owned Business, Calif Based Entity,	This project has allowed General Electric, an industry leader that has not previously participated in gasification in the United States, to enter this emerging market in California. A combination of use of General Electric's commercial-ready gasification technology along with the producer gas clean up research will prove distributed, renewable, and cleaner woody biomass fueled electricity as demonstrably economically feasible and able to operate for 7000 hours/year.	1a, 1c, 2a,

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Interra Energy, Inc.	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	This project will help to stabilize the grid, improve service reliability, and reduce the risk of forest fire. Advanced bioenergy systems that produce useful co-products can also reduce the cost of renewable energy procurement and mitigate the GHG impacts of energy generation. Interra technology could prove to be a cost-effective modular distributed generation system alternative compared to conventional biomass plants, helping to meet California's aggressive renewable energy goals.	1a, 1c, 2a,
Lawrence Berkeley National Laboratory	Ranked # 12	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will advance a breakthrough technology that is scalable across investor- owned utility territory leading to well coordinated and managed high-density PV installations and ratepayer benefits of greater reliability, lower costs and increased safety.	1g, 2a, 3f, 3h, 4a, 5c, 5d, 5e,
SunSpec Alliance	Ranked # 1	N/A	N/A	Calif Based Entity,	Ratepayer benefits are greater reliability, lower cost, and increased safety from the use of smart inverters with single standard communication interface to save installation time; a flield demonstration of DER systems on feeder circuits at or above 15% penetration; measure of reliability and safety impacts; and demonstrating participation in ancillary service markets to evaluate benefits of utility cost avoidance.	1b, 1e, 1g, 1h, 2a, 3a, 3b, 3d, 3f, 3h, 4a, 5a, 5b, 5c, 5d, 5e,

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Center for Sustainable Energy	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Senate Bill 350 (De Leon, 2015) sets energy efficiency targets for 2030 and allows for the targets to be achieved, in part, from utility programs that provide financial incentives and rebates to their customers to increase energy efficiency. This project will help increase customer participation in utility efficiency programs by better understanding the social, cultural and behavior aspects of the Hispanic subpopulation that discourage or prevent their participation.	1f, 1h, 5c,
Indicia Consulting	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity, Women-owned Business	Senate Bill 350 (De Leon, 2015) sets energy efficiency targets for 2030 and allows for the targets to be achieved, in part, from utility programs that provide financial incentives and rebates to their customers to increase energy efficiency. This project will help increase customer participation in utility efficiency programs by better understanding the social, cultural and behavior aspects of various subpopulations that discourage or prevent their participation.	1f, 1h, 5c,
TRC Engineers, Inc.	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Senate Bill 350 (De Leon, 2015) sets energy efficiency targets for 2030 and allows for the targets to be achieved, in part, from utility programs that provide financial incentives and rebates to their customers to increase energy efficiency. This project will help increase customer participation in utility efficiency programs by better understanding the social, cultural and behavior aspects of multi-family building tenants that discourage or prevent their participation.	1f, 1h, 5c,
Glint Photonics, Inc.	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	Glint technology has the potential to capture 1% of the future potential rooftop solar market (153 MW). Glint Photonics anticipates a product introduction to the market in 2018, with penetration of the rooftop market to grow in the 2020s. If the anticipated performance can be realized, the company anticipates 1 MW of panels installed by the end of 2020, with significant potential for additional capacity and cost savings in future years.	1a, 4a,

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Biogas & Electric, LLC	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	The project will enable lean burn biogas engines to comply with existing and future air quality regulations when deployed at wastewater treatment plants, resulting in reduced flaring and net reductions in emissions.	1a, 1c, 1f, 3a, 3b, 4b, 4e,
Lawrence Berkeley National Laboratory	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A	This project will provide valuable insight to identify optimum pathways that overcome barriers for large-scale deployment of biomass conversion technologies. The research will focus on overcoming barriers to large-scale deployment for urban stakeholders, including odor, access to the utility grid, and improved utilization of waste heat.	2a, 3g, 3h, 4a,
Taylor Energy	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	The project will research, develop, and verify thermal catalytic gasification technology that will overcome technical and economic barriers preventing the use of RDB as an energy resource in California. Completion of the current gasification/reforming test program will enable future scale-up to 30-ton/day RDB-to-energy (1-MW scale), in preparation for commercial scale design at 300-ton/day, generating 10-MW of electricity with costs of less than \$3,750/kWh of installed capacity.	1a, 1b, 1e, 2a, 3a, 4a, 4e,

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Kennedy/Jenks Consultants	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will result in reliable and cost effective energy production by producing bioenergy from waste water treatment plants (WWTP) through the addition of locally available food waste and restaurant fats, oil, and grease (FOG). Though there is some seasonal variation, the supply of wastewater, food waste and FOG are very reliable.	2a,
Southern California Gas Company (SoCalGas)	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will develop and demonstrate a new bioenergy pathway which utilizes hydrothermal processing and concentrating solar power to convert dairy manure into biocrude and renewable natural gas that will enable dispatchable and low emissions renewable electricity.	1a, 1i, 2a, 3a, 3f, 3g, 3h, 4a, 4b, 4e, 5a,
Gridscape Solutions	Ranked # 8	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Minority-owned Business, Calif Based Entity,	The microgrids will attempt to reduce grid congestion which increases grid reliability. The microgrids will demonstrate their ability to improve energy efficiency by optimizing power generation and loads using advanced, automated microgrid control. Local, renewable photovoltaic generation and energy storage may provide increased energy security during utility power outages and reduce carbon dioxide emissions.	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
All Power Labs, Inc.	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A		Biomass gasification can provide ratepayers with a new kind of energy, one that is on demand and renewable, but not weather dependent. This project, built entirely of technology designed and manufactured in California, will demonstrate a cost effective way to address a myriad of issues associated with climate change, including drought, fires, and the need for more renewable energy.	1a, 1c, 2a,

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Organic Energy Solutions	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A		The project will demonstrate the use of electrical generation powered by digester gas to provide reliable power to a critical facility during outages on the grid. The electricity from this project will be exported to the SoCal Edison distribution grid through SB 1122 Bioenergy Feed-in Tariff. The system will also be equipped with islanding capability to support the critical facility during an interruption in the grid.	1b, 1c, 2a,
Robert Bosch LLC	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A		This project will demonstrate the feasibility and benefits of a commercial-scale DC building microgrid that integrates multiple advanced technologies to provide reliable power to the loads on the DC circuits, resilience during grid outages, increased energy efficiencies and renewable energy utilization.	1a, 1b, 1c, 1e, 1f, 1h, 11, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
Humboldt State University Sponsored Programs Foundation	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will measure customer energy and cost savings benefits and demonstrate the benefits of microgrids for vulnerable communities. The microgrid will have the ability to disconnect from and operate without the larger electric grid by managing and balancing a portfolio of distributed energy resources.	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,

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Chabot-Las Positas Community College District	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project identifies and measures the benefits of microgrids for customers that sift peak energy use to coincide with peak solar production and for distribution utilities and the California ISO by demonstrating the resource capability of microgrids. This project will measure the microgrid's benefits by using existing retail rates as well as simulating a market in which all microgrid benefits can be monetized.	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
Regents of the University of California, Los Angeles	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This Agreement aims to provide greater electricity reliability and lower costs by demonstrating technologies for the deployment and integration of cost effective use of plug-in electric and hybrid electric vehicles for electricity storage and peak shaving. The project attempts to provide grid services to mitigate the PV duck-curve with vehicle-to-grid and grid-to-vehicle infrastructure to smooth renewable over-generation while generating a revenue stream for the vehicle user.	1e, 1f, 1i, 2a, 5b,
Lawrence Berkeley National Laboratory	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Benefits include greater reliability in the electrical transmission and distribution infrastructure, increased safety, and lower costs. The managed charging control system will enable growth in PEV adoption without straining current grid infrastructure. The system will be developed to help avoid vehicles stranding during travel, thereby increasing safety.	1c, 1g, 2a, 3f, 3h, 4a, 4b, 5b,

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Trane U.S., Inc.	Ranked # 10	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity		1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
San Diego Gas & Electric Company	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project proposes to demonstrate and measure improved grid resiliency. The project will attempt to lower costs and provide environmental benefits by making greater use of locally available renewable energy while avoiding adverse grid impacts through the use of a microgrid controller/energy management system.	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
U.S. Geological Survey (Forest and Rangeland Ecosystem Science Center - FRESC)	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A		Outcomes from this project can affect the reliability of energy delivery, cost structures and, in some cases, safety. For example, reliability of energy delivery can be influenced by costly approaches to environmental management (e.g., turbine curtailment when protected species are present). Furthermore, cost structures are determined in part by the quantity and efficiency of compliance with environmental regulations.	4f, 4g,
University of California, Riverside	Ranked #3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will highlight a pathway for water agencies in California to increase energy efficiency and reduce their peak energy consumption with no decrement in service or reliability by overcoming communication challenges with different vintages and vendors of control equipment. Better pump and other equipment management will reduce energy costs; especially during peak demand periods when energy costs are most expensive.	1e, 1h, 4a,

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Porifera, Inc.	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	Treatment of industrial wastewater is very challenging because of the high solids, pulps, free and emulsified oils and greases and their high chemical and biological oxygen demand. If the project is successful then this technology could be used to treat challenging wastewaters to achieve high purity and provide high temperature water for reuse while using less energy than other processes. Reclaiming water for onsite reuse will reduce the need for fresh water purchases.	1f, 1h, 3e, 4a, 4c,
Regents of the University of California, Riverside Campus	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The results of this project are expected to improve the management of hydropower units which should reduce overall electricity generation costs.	1c, 4a, 5c,
Porifera, Inc.	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	If successful, this technology can save thermal and electrical energy for each facility and eliminate the use of evaporators for making juice concentrates. Evaporators require massive amounts of steam created from boilers to produce concentrate, and boilers need massive amounts of fuel in creating that steam.	1f, 1h, 4a, 4c,
Lawrence Berkeley National Laboratory	Ranked # 12	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Improvements in window and façade technologies could lower energy use and demand in buildings due to reduced HVAC and lighting loads while also reduce building owner operating costs.	1e, 1f, 1h, 4a,

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Regents of the University of California, Berkeley	Ranked # 1	N/A	N/A	Calif Based Entity,	The anticipated benefits to California includes improved predictive planning and scheduling tools to manage hydroelectric resources that are needed to adapt to increasing vulnerabilities and uncertainties of a changing climate. This project will specifically target three powerhouses (Rock Creek, Crest, and Poe Powerhouses) operated by PG&E.	1h, 3f, 4a, 5c,
Maulbetsch Consulting	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	Hybrid cooling systems for electric power plants will provide an alternative cooling option for California power plants that can simultaneously achieve significant reduction in water consumed for power production compared to closed-cycle wet cooling, improve both peak load and annual average power production efficiency and output compared to all-dry cooling and reduce the air emissions that all dry cooling systems can impose on fossil-fired power plants.	1c, 3b, 4c,
Energy and Environmental Economics, Inc (E3)	Ranked # 7	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity	This project will develop options for improving electricity planning methodologies, such that they better incorporate knowledge of how the electricity system will need to evolve over the next 15 to 30 years. This will include a better understanding of how current policy choices will impact long-term climate outcomes, providing critical policy-relevant information to state energy agencies that will be implementing the Governor's energy and climate goals over the next 15 years.	3f, 4a,
Wexus Technologies, Incorporated	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A		The Wexus platform uses site data and electric and water utility data to estimate how energy is used on-farm. The data is translated into reports and informs the farmer when to turn off equipment in order to participate in demand response programs. The technology could save farmers about 10% in energy and water bills. The following are the estimated savings over three years for the 3 demonstration farms: 2.4 million kWh, 4000 acre feet of water, 600 metric tons of GHG and more than \$400,000	1e, 1f, 1h, 4c,

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Frontier Wind	Ranked # 8	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	A key benefit of the project is the ability to avoid the need to curtail California wind turbine capacity to mitigate against potential fatal bat interactions. A second key benefit of the project is the ability to enable an increase in installed California wind generation capacity. Wildlife concerns limit the in-state geographies where wind power facilities can be sited.	1c, 3a, 4g,
Lawrence Berkeley National Laboratory	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Long-term energy scenario analysis contributes multiple benefits to California's ratepayers by providing guidance for future electricity system investment that can meet carbon limits at the lowest cost. In addition, the energy system resilience analysis will help to ensure the electricity system is more robust to future external shocks.	3f, 3h, 4a,
Lawrence Berkeley National Laboratory	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Research will maximize benefits from urban heat island (UHI) mitigation by verifying relationships between the UHI effect and land use/land cover; using these measurements to calibrate and validate models that estimate benefits of mitigation measures; establishing a baseline of today's UHI effect against which the efficacy of future UHI mitigation (cool community) programs can measured; and leaving in place a set of research-grade monitors that can be used to track changes in the UHI effect.	1c, 1e, 1f,

	selected, provide the rank of the selected bidder	If competitively selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *		How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
The Regents of the University of California, Irvine	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will help limit the costs of energy while complying with GHG goals.	4a,
Regents of the University of California, Berkeley	Ranked # 8	Funds were awarded to passing proposals in rank order.	N/A		If successful, the proposed technology could reduce the energy intensity of industrial facilities by 5% to 26% by reducing energy inefficiencies. Market assessments have estimated savings of 15% to 17% in compressed air system energy use with paybacks of less than 2 to 3 years, respectively.	1f, 1h, 4a,
Kennedy/Jenks Consultants		Funds were awarded to passing proposals in rank order.	N/A		If the project is successful, the application of CDF to wastewater filtration could result in 35 percent aeration electrical savings. Assuming 10 percent market implementation by the wastewater treatment sector, this could result in annual savings of 34 million kWh and \$3.6 million in reduced operating costs.	1f, 1h, 4a,

If competitively selected, provide the name of selected bidder	If competitively selected, provide the rank of the selected bidder in the selection process	selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
Center for Sustainable Energy	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will provide greater reliability, lower costs, and increased safety for California IOU ratepayer. The project will provide California with an open protocol that enables large amounts of new, low cost flexible capacity on the grid. It will minimize potential stranded investments in less cost effective forms of flexible grid resources, maximize renewable and PEV integration, and promote a safer, more reliable low carbon future.	4a, 4b,
ChargePoint, Inc.	Ranked # 1	N/A	N/A		This project will result in the ratepayer benefits of greater electricity reliability and lower or deferred costs in upgrading local distribution infrastructure by providing a mechanism for demand management for local distribution networks, specifically managing PEV charging with input from PEV customers, vehicles, and utility signals.	1g, 1h, 3f, 4a, 4b, 5b,
Electric Power Research Institute (EPRI)	Ranked # 11	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	A key benefit of this project to California IOU ratepayers is to find the upper limits of solar PV hosting that may be achieved using smart inverters and naturally occurring products, thereby providing insight into the necessity and timing in which such additional DER devices may be required in addition to lower costs and greater electricity reliability.	1b, 1e, 1g, 1h, 2a, 3a, 3b, 3d, 3f, 3h, 4a, 5a, 5b, 5c, 5d, 5e,

If competitively selected, provide the name of selected bidder	If competitively selected, provide the rank of the selected bidder in the selection process	selected, explain why the bidder was not the highest scoring bidder, explain why a	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
Charge Bliss, Inc.	Ranked # 11	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	The microgrid will demonstrate reduced electrical system downtime for the hospital in critical areas. The microgrid and controller will showcase reduced greenhouse gas emissions, reduced electrical demand, save direct energy costs, and provide grid support.	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 5a, 5b, 5d, 5h,
PowWow Energy, Inc.	Ranked # 1	N/A	N/A	Small Business, Calif Based Entity,	The deployment of this technology could result in energy savings of approximately 20 percent due to reduction in pumping energy. For the affected demonstration farms, this could annually save approximately 396,786 kWh and 992 Acre-feet of water.	1f, 1h, 4a, 4c,
Sierra Institute for Community and Environment	Ranked # 2	Funds were awarded to passing proposals in rank order.			The project will result in greater electricity reliability, lower costs, and increased safety by decreasing peak demand. Reducing electricity consumption at peak and off-peak times at a public facility will lower costs to ratepayers locally and on the grid in general. Reducing risk of catastrophic wildfire in a fire-prone and drought-stricken region will increase safety. Wildfires can affect infrastructure such as electric transmission lines, as well as threatening human life and safety.	
Prospect Silicon Valley dba Bay Area Climate Collaborative (BACC)	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will offer immediate benefits to the College of San Mateo campus by saving a projected \$150,000 or more annually from peak demand reduction and efficient energy management measures. In addition the integrated PV and energy storage system will reduce hardware and installation costs compared to installing each unit separately, and will capture significantly more energy than a traditional solar module over the course of a year (up to 13% more energy).	1a, 1b, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3c, 4a,

If competitively selected, provide the name of selected bidder	If competitively selected, provide the rank of the selected bidder in the selection process	selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	agreement, specify date of notification	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
ABEC #4 LLC	Ranked # 1	N/A	N/A	Calif Based Entity,	Combining renewable generation with waste heat collection and cooling, the project will increase energy efficiency of the existing dairy by an estimated 10% or more, while also reducing peak grid power demand. The project benefits include substantial reductions in greenhouse gas emissions, lower manure handling costs, and provide technical and economic data on community-scale biopower production.	3h, 4a, 4e,
UC Davis	Ranked # 6	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will result in an estimated reduction in annual electricity consumption of up to 87% (at least greater than 10%), for a cost savings of roughly \$29,000 per year and associated greenhouse gas reductions of up to 253 tons per year. Furthermore, the success of this project will provide follow-on benefits to California's large wine industry by proving that winemaking can be an environmentally-friendly process.	1a, 1c, 1e, 1f, 1h, 1i, 2a, 3a, 3e, 3g, 4a,
Electric Power Research Institute (EPRI)	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Plug-in electric vehicles with integrated vehicle-to-grid systems have the potential to simultaneously improve air quality, reduce vehicle operational costs and have the potential to reduce grid stress and increase grid reliability and stability.	1c, 1e, 3f,
Asetek USA, Inc.	Ranked #3	Funds were awarded to passing proposals in rank order.	N/A		If successful, the project would validate the performance, reliability, cost savings and payback of a data center efficiency technology that could reduce cooling costs while being able to be installed as a retrofit. This could lead to overcoming barriers to adoption by minimizing operational disruptions and costs compared with conventional installations and retrofits.	1f, 1h, 4a,

	selected, provide the rank of the selected bidder in the selection process	selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	
The Regents of the University of California - Riverside	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A		This system will result in greater electricity reliability, lower electricity costs, reduced peak energy demand and avoidance of failures and outages. The project is scalable in both size and quantity. Therefore, this effort will demonstrate the commercial feasibility to deploy many megawatt hours of dispatchable energy integrated in a photovoltaic/battery storage configuration.	1e, 1g, 1h, 2a, 3f, 3h, 4a, 5a,
Electric Power Research Institute (EPRI)		Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	This project will benefit small and medium commercial buildings, such as retail stores, offices buildings and food service. It is estimated that the HVAC systems for these sectors use 7,000 GWh and contributes 5 GW of peak demand. This project could reduce HVAC energy consumption and peak demand by as much as 40 percent and could be implemented in existing and new commercial buildings through direct replacement of rooftop packaged air conditioners.	1f, 1h, 4a,
ICF Incorporated, L.L.C.	Ranked # 4	Funds were awarded to passing proposals in rank order.	N/A		This project will identify adaptation measures for electrical system that are practical and aligned with existing policies, based on a comprehensive understanding of the vulnerabilities of specific assets and how these combine at a system level. This work will further the state of knowledge by employing improved modeling techniques that take into account protective structures and coastal processes.	5a, 5d,

If competitively selected, provide the name of selected bidder	selected, provide the rank of the	the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
Lawrence Berkeley National Laboratory	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The project will lead to technological advancement and breakthroughs to overcome barriers to the achievement of California's statutory energy goals—namely to maintain grid reliability and safety while adapting to the challenge of changing climate and wildfire risk. Researchers will apply a unique methodology to measure wildfire risk, allowing them to match an evolving wildfire probability over time with an evolving electricity grid.	1c,
The Regents of the University of California, Los Angeles	Ranked # 3	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	Local and regional governments and utilities will gain an understanding of the capacity of substations and transmission lines and how those capacities might be impacted by extreme heat events. Doing so will create a greater level of understanding on where the grid is most vulnerable, which neighborhoods they serve, and what types of adaptation measures need to be taken by the utility as well as state, regional, and local actors. It can equally help guide investments in distributed generation.	1e, 5a, 5d,
Regents of the University of California, Berkeley	Ranked # 1	N/A	N/A	Calif Based Entity,	Cal-Adapt will provide integrated tools that will support planners and managers as they protect and plan for future electricity infrastructure reliability and stability. Such integrated planning will contribute multiple benefits to California's electricity ratepayers by helping to stabilize the grid, improve service reliability, and reduce financial losses associated with power outages.	4a, 5d, 5e,

If competitively selected, provide the name of selected bidder	selected, provide the rank of the selected bidder	If competitively selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization *	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
California Homebuilding Foundation (CHF)		N/A	N/A	Calif Based Entity,	The California Energy Code will soon require new homes to be constructed with high performance walls and attics to meet energy efficiency standards. This project will help overcome market barriers for high-performance walls and attics by providing the construction industry with access to on-the-job training and tools on the best available technologies, techniques, and practices for complying with the new requirements.	1c, 1e, 1f, 1h, 2a, 3c, 4a, 4b,
Center for Sustainable Energy	Ranked # 2	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	The California Energy Code was updated in 2013 to require lighting systems in large buildings to be capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response. This project will help ensure an adequate workforce, trained in the proper installation and maintenance of AutoDR communications equipment, exists to meet California Energy Code requirements for commercial buildings.	1e, 1g, 1h, 2a, 3f,
LightSail Energy	Ranked # 5	Funds were awarded to passing proposals in rank order.	N/A	Small Business, Calif Based Entity,	This project will provide California utilities with information that can be used in assessing the costs and benefits of I-CAES to reduce the capital, installation and operation costs of the system. This constitutes a step towards meeting the Energy Commission targets of \$1,000/kW, \$200/kWh, and 80% round trip efficiency for energy storage.	1e, 1i, 4a, 5b,

If competitively selected, provide the name of selected bidder	selected, provide the rank of the selected bidder	selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected	date of notification		How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals	Applicable Metrics
Kennedy/Jenks Consultants	Ranked # 9	Funds were awarded to passing proposals in rank order.	N/A	Calif Based Entity,	If this project is successful, it will overcome barriers to the use of membrane treatment and could reduce energy use by reducing the build-up in membrane pores and removing colloidal particles in the feed water. The anticipated benefits include reducing the energy associated with the membrane treatment process and the cost of water reclamation.	1f, 1h, 4a,

A project kickoff meeting was held in April 2015 as part of a combined forecasting programmatic kickoff, and technical progress on the project has begun. The project is currently undergoing an amendment process to allow ltron and subcontractor Clean Power Research access to data made available through the California Public Utilities Commission, to support the project analysis. The scope and schedule of the project will remain unchanged. The project team is currently assembling an advisory
committee and will schedule the first meeting in early 2016.
This project commenced initial project modeling activities in the first half of 2015. However, due to forest fires in late 2015 that damaged Geyser's geothermal facilities, project-related activities halted and the company focused on restoring the facilities damaged by the fire. The project schedule will be adjusted to reflect this unanticipated delay.
A project kickoff meeting was held in April 2015 and technical progress is underway. The project team has conducted heat transfer modeling and simulation as well as laboratory-scale material compatibility experiments that will feed into deliverables due in 2016.

The project was approved at the December 10, 2014 Energy Commission Business Meeting and the project work was started in January 2015. The process design and the mechanical design of all major components were completed, along with specified control system requirements which included the use of three tanks, the minimum number prescribed to evaluate the operation and viability of a multiple tank system. Halotechnics terminated the project after 10 months prior to the procurement of any hardware due to insufficient commercial traction from customers in the concentrated solar power industry.
A project kickoff meeting was held in April 2015 as part of a combined forecasting programmatic kickoff. Technical orogress is underway. The original project schedule was revised in June 2015, and the first technical tasks are now scheduled for completion in April 2016.
A project kickoff meeting was held in April 2015 as part of a combined forecasting programmatic kickoff, and lechnical work commenced in June.
A project kickoff meeting was held in April 2015 as part of a combined forecasting programmatic kickoff. Technical oragress on the project is underway, and all of the 2015 oragress reports were delivered on time. The original project schedule was revised in November 2015, and the first technical task is now scheduled for April 2016, when the initial forecast models will be delivered. The first Technical Advisory Committee meeting will be held in March 2016.

Update
Draiget was approved at the Nevember 2015 Energy
Project was approved at the November 2015 Energy Commission business meeting.
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Project was approved at the November 12, 2015 Energy
Commission business meeting.
Approximately 15% of the total agreement has been
completed. This includes kick-off meeting, technical
advisory committee meetings and development of test methodologies. Project highlighted at the 2015 EPIC
Symposium.
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This project was approved at the February 15, 2015 Business Meeting. A project update review was held on
September 25th 2015. They have completed the draft
field test plan and literature review. Instrumentation of
first test house is finished, with a focus on instruments to
be installed before the insulation is put in place. A Letter
of Agreement has been approved by the Commission to
add De Young Properties as a Subcontractor. This was a highlighted project at the 2015 EPIC Symposium in
Folsom, California on December 3, 2015.
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pdate
roject was approved at the February 25, 2015, business leeting and was highlighted at the EPIC Symposium on ecember 3, 2015.
roject was approved on February 25, 2015 and was ghlighted at the EPIC Symposium on December 3, 015.
his project was highlighted in the December 2015 EPIC ymposium. The research team is currently coordinating ith LBNL on putting together a technical advisory ommittee (TAC) for feedback on the project. The first AC meeting will be held in early 2016.

pdate
ickoff meeting was held August, 2015. Recipient is
nalizing agreements with other participants.
roject started June 4, 2015. Project Kickoff meeting was
eld on June 8, 2015. There have been two workshops to etermine the use cases for the StorageVET tool on
eptember 1 and December 10, 2015. The use cases for ne tool were finalized on December 21. Alpha and Beta
oftware is expected in the second half of 2016.
roject completed its kickoff meeting on July 14, 2015
nd is currently underway
project kickoff meeting was held in June 2015.
echnical progress is underway, and all of the 2015 rogress reports were delivered.

Update
The agreement was approved at the Energy Commission's April 2015 business meeting and the kickoff meeting was held in August 2015. The project is currently underway.
Researchers submitted the technical portion of the Feedstock Test Plan and are working with TSS Consultants on the background information about feedstock availability across the state.
The project was kicked off in July 2015. Significant progress has been made on subsystem development including pneumatics, compressor system, and controls. The actuator work has moved to design, building, and testing for the 1-axis tracking system, which includes manufacturing of a new belilows design with improved torque capability. Researchers are modeling how potential failures due to leaks or blockages can impact tracker operation and performance. A 6.5kW tracker was assembled and installed as a precursor to the PVUSA field installation. It has been continuously tracking without issues or downtime since it went online.
In 2015, Haas completed the SCE data security review; consulted with SCE program staff to determine data request needs, covering program data, participant billing data, and non-participant data; worked with SCE to prepare the first data request and data transfer protocol; continued spatial analysis of climate zone boundaries within SCE territory; and performed literature review to identify number of participants and reported savings by year.

Jpdate
The agreement was approved at the Energy Commission's April 2015 business meeting and the cickoff meeting was held in June 2015. The project is currently underway.
The project has completed process simulation, designed adsorber unit, designed and initiated modifications to heir biogas upgrader unit, and commenced deployment activities for testing at one of the two field locations. Durrently, first deployment is scheduled for 6-8 weeks at he Simi Valley Landfill and 4-6 week deployment at the Miller-Coors wastewater treatment plant.
A project kickoff meeting was held in June 2015. Fechnical progress is underway, and all of the 2015 progress reports were delivered.
The researchers have started work to develop near term and long term scenario projections for waste biomass supply in California.

Jpdate
Site engineering and drawings were completed in December 2015 and the project schedule has been accelerated by approximately eight months; equipment installation will begin in late 2016 instead of early 2017. Wo major roadblocks have been encountered, however Southern California Edison has identified the need for minor substation upgrades as well as another project in he local area which has applied to interconnect. A supplemental review is being performed which will add approximately 20 days to the 6 month "fast track" interconnection schedule. The project was recently presented at the December 2015 EPIC Innovation Symposium in the "Bioenergy and High Fire Risk Areas".
in 2015 the project team completed an extensive iterature review, as well as a set of interviews with subject matter experts in both the energy efficiency field as well as Hispanic community leaders. These efforts have established a solid baseline that will inform the rest of the study. In 2016, the project will move to recruiting individual level participants to conduct energy-use ournals, in-home interviews and electricity meter data analysis.
Construction and research planning have begun and equipment with a long lead time has been ordered. Permitting work is ongoing. Local meetings with potential contractors for groundwork have been planned to prepare hem for bidding.

Update
The project team is currently in the process of finalizing the modifications to the technology in order to conduct the first stage of testing required under the project. In addition, they are finalizing the control system software in order to accurately monitor, analyze, and report the data generated during the project.
The project was kicked off in July 2015 with the first technical advisory committee meeting in December 2015. The recipient also presented and participated in the EPIC Symposium in December 2015. Researchers performed statistical analyses of micro-phasor units data from installations at LBNL and obtained equipment and evaluated locations for new unit installations. Software to create grid event library is now functional. Researchers are mining the dataset for information that pertains to generator operation and event characterization is in progress.
The project was kicked off in August 2015. The researchers finalized the subcontract agreement with Solar City and is making progress with other subcontractors. The recipient presented this project at the EPIC Symposium in December 2015. The project is on track.

Update			
n 2015 the n			

In 2015 the project team began work on the regression analysis and market characterization. The first Technical Advisory Committee meeting was conducted in September; the initial benefits questionnaire has been completed. Work also started to conduct literature review on energy behaviors and financial decision-making among Chinese-speaking, Spanish-speaking and African American populations.

The project kicked off in June, 2015 and is proceeding on schedule. The TAC was formed immediately after the kickoff meeting, held an initial conference call in mid-June and a first meeting in October. The research team has identified potential respondents, developed interview guides, conducted interviews, and is currently transcribing interview data for analysis. The team has also been working with utilities and community choice aggregators to develop partnerships to identify a sample frame for the next stage of interviews. One roadblock was encountered when PG&E pulled out of discussions and refused to participate or provide data access. Discussions with other IOUs continue.

In 2015, the research plan for recruitment and project launch was finalized. Study preparation included the development of data collection instruments and outreach material targeting multifamily tenant study participation to assist in conducting the study.

A project kickoff meeting was held on July 20, 2015. The first Technical Advisory Committee (TAC) meeting was held in January 2016 where diverse comments and recommendations were gathered. TAC members agreed that anticipated performance should be reported in terms that facilitate a direct comparison to silicon panels, and to use levelized cost of energy as a performance metric for ultimate comparison. The technical report from Task 2 was delivered in December 2015, and all progress reports have been delivered on time.

Jpdate The recipient is currently engaged in analysis of the innerobic digester effluent, site conditions and emissions
analysis necessary prior to selecting an internal combustion engine to be matched with the NOxRx corubber unit. Detailed NOxRx designs will be executed after an engine is selected. The project team pursued and received approval from the Palm Springs City Council of a non-binding letter of interest with Veolia North America for development of a biogas-to-electricity energy project at the Palm Springs wastewater treatment latent which authorized the City Manager to execute all the necessary documents to that end.
The agreement was approved at the Energy Commission's April 2015 business meeting and the iickoff meeting was held in July 2015. The project is rurrently underway.
The contractor is working on the design of the Process Development Unit and the fabrication drawings. Preliminary layout work has been started at the host site.

Jpdate
Researchers are establishing baseline conditions for digester operations without the addition of food waste and FOG. Periodic samples are analyzed to determine steady state operations of Digester #2 at the Silicon /alley Clean Water facility. Extensive sample analyses to benchmark digester performance will be performed by mid-March, 2016. Installation of the food waste preprocessing unit and high strength waste (FOG) cleaning equipment is underway. Installation and pre-testing of the equipment should be completed in early summer, and the evaluation of enhanced digester gas production will be available by fall 2016.
A project kickoff meeting was held in June 2015 and
A project Rickoff inteeting was risel in Julie 2018 and sechnical progress is underway. Negotiations with subcontractor NREL were completed in December 2015 and completed redesign of the receiver is expected to stay on schedule, completing by April 2016. Design of the Benifuel hydrothermal processing (HTP) unit with input rom the Pacific Northwest National Laboratories (PNNL) is proceeding as planned and is expected to complete in May 2016, after which the construction will go out to bid.
Gridscape Solutions built a small-scale, prototype
nicrogrid system in their lab and are testing their design.
Researchers completed review of Alpha requirements and design and transportation of the Beta subsystems as planned. The primary subsystem was built at a smaller scale for cost and testing purposes.

Jpdate
This project has been delayed significantly due to a contracting issue between Organic Energy Solutions and its main technology holder and inability to secure the match funds needed for the project. Recently, OES was able to secure the match funds through a new technology provider and reorganizing the project team including eplacement of its administration team. The proposed changes were submitted to Energy Commission staff in February 2016 and are pending management review as whether to proceed with the new technology provider.
The agreement was approved at the Energy Commission's April 2015 business meeting and the kickoff meeting was held in July2015. The project is zurrently underway.
The agreement was approved at the Energy Commission's June 2015 business meeting and the ickoff meeting was held in September 2015. The project s currently underway.

The Energy Commission and Chabot-Las Positas Community College District kicked of the micorgrid project in Summer 2015 and during Fall/Winter 2015 the district
executed subcontracts and vendor agreements. During Vinter 2016 the district completed the basis of design for ne microgrid and initiated an interconnection request with G&E.
The agreement was approved at the Energy Commission's April 2015 business meeting and the lickoff meeting was held in June 2015. The project is urrently underway.
The agreement was approved at the Energy Commission's April 2015 business meeting and the ickoff meeting was held in July 2015. The project is urrently underway.

Jpdate
The agreement was approved at the Energy Commission's April 2015 business meeting and the ickoff meeting was held in September 2015. The project is currently underway.
s of December 2015, the project is on time and on oudget. Test plans are being formulated for the Real ime Digital Simulator.
The agreement was approved at the Energy
Commission's June 2015 business meeting and the ickoff meeting was held in November 2015. The project s currently underway.
Coloff constitute held. The contracted is deignisided.
cickoff meeting held. The contractor's is doing initial ssessment of site conditions at the three proposed emonstration sites. Project was highlighted at the EPIC symposium December 3.

pdate
he project is underway, kickoff meeting held, onstruction underway, and equipment being ordered. his project was also highlighted at the 2015 EPIC ymposium.
he agreement was approved at the Energy ommission's May 2015 business meeting and the ckoff meeting was held in August 2015. The project is urrently underway.
he project is underway. Kickoff meeting held,
onstruction underway, equipment has been ordered. he technology was highlighted at the 2015 EPIC ymposium.
roject kickoff meeting occurred in July 2015 and the roject is currently underway.
logect is currently underway.

The project was approved at the Energy Commission's May 2015 business meeting and the kickoff meeting was held in September 2015. The project is currently underway.
The Contractor conducted site visits to three thermal generating plants Xcel Energy's in Colorado (Comanche plant, Unit 3) and PG&E's Colusa and Gateway
generating stations that use hybrid cooling. Data acquisition has begun at all three plants so that preliminary comparisons of spreadsheet tool estimates for hybrid cooling with actual plant data can be accomplished. Seven progress reports and the Final Technology/Knowledge Transfer plan have been submitted. The research team is improving their models and data
sets. The project team participated in a joint technical meeting in September 2015 to coordinate on assumptions and contributions for scenario development among the three research teams that received awards for this work. Policy and Technical Advisory Committees meetings took place on February 24, 2016.
The project kickoff meeting was held on June 30th and the project team is currently conducting site visits to determine baseline energy (and water where possible) usage. This project was highlighted at the 2015 EPIC Symposium.

Update
The first Technical Advisory Committee meeting was held in October 2015. Researchers have completed the design stage and is in lab testing for the system.
This project began in June 2015. It is one of three contracts to separate research groups to develop comprehensive long term energy scenarios that take into account both climate change impacts and climate policy changes to the electricity system. The researchers have prepared presentation for a technical advisory committee and policy advisory committee held on February 24, 2016.
In 2015, the team assembled a Technical Advisory Committee with participation from key stakeholders as well as scientists; identified and characterized a study area in the Los Angeles air basin, based on existing observed weather datasets as well as several Land-Use-Land Cover (LULC) datasets; developed a strategy for manipulating existing data into an appropriate form for further analysis involving the teams meso-urban meteorological model; and performed preliminary analysis of the urban heat island signal in selected areas of Los Angeles.

pdate
he research team has met with the two other Energy commission funded long term energy scenario projects. he three teams have established a base set of shared ssumptions. They prepared for a joint Technical dvisory Committee meeting and a Policy Advisory committee meeting that was held on February 24, 2016.
susiness meeting approval date: 5/13/2015. Contract executed 9/4/2015. Kickoff meeting benefits uestionnaire submitted 12/14/2015.
he project kickoff meeting was held on June 30th and ne project team is currently in the design phase. This roject was highlighted at the 2015 EPIC Symposium.

pdate
SE has developed the Demand Clearing House becifications and have begun recruiting participants for the demonstration phase. CSE continues to develop the L&V plan.
hargePoint is currently developing the communication terface and testing protocols to enable level 2
Iternating current chargers to exchange data and control
nessages with plug-in electric vehicles.
he project was kicked off August 2015 and researchers
re in the process of signing subcontractors agreements. he project is on track.
ne project is on track.

Ipdate
he original site host withdrew from the project, therefore ne Energy Commission is in the process of reviewing the
otential changes to the agreement for a project site.
ickoff meeting completed. Contractor has begun
nalyzing data collected at sites. This project was ighlighted at the 2015 EPIC Symposium.
igningrited at the 2013 Erio Symposium.
he Sierra Institute is coordinating with its major design
ubcontractor (High Sierra Community Energy levelopment Corporation-HSCEDC) and Feather River college to finalize designs for the Organic Rankine Cycle
be deployed at the Plumas County facility. Additionally, ligh Sierra is negotiating with HSCEDC to serve as the
roject developer to procure construction contractors and versee the construction process. Construction is
urrently anticipated to begin in late summer, 2016.
he project kickoff meeting was held in August 2015.
echnical progress is underway.

Jpdate
a project kickoff meeting was held in July 2015. echnical progress is underway, and all of the 2015 progress reports were delivered.
The agreement was approved at the Energy Commission's June 2015 business meeting and the
ickoff meeting was held in October 2015. the project is currently underway.
unonly underway.
PRI has developed the system requirements, irchitecture, and design parameters as well as the test irotocols for the proposed V2G communication system.
he agreement was approved at the Energy
Commission's June 2015 business meeting and the ickoff meeting was held in June 2015. The project is currently underway.

Update
The project was kicked off in December 2015. UC Riverside initiated the coordination effort with the Chemehuevi Indian Tribe and project partners and started collecting the Community Center energy consumption data. UC Riverside presented the project at the EPIC Symposium in December 2015.
The agreement was approved at the July 8, 2015 Business Meeting. The contract was signed on November 12, 2015. This project was highlighted at the 2015 EPIC Symposium in Folsom, California on December 3, 2015. A team meeting was held in San Ramon on December 18, 2015 to review the project and discuss subcontractor responsibilities. EPRI is currently reviewing Northern California sites for a second demonstration site of the system.
The project kickoff meeting will be held on January 27, 2016. The meeting has been combined with the parallel natural gas project to promote synergy and reduce non-labor cost. There was a minor delay in starting of the project, in order to synchronize with the natural gas project. However, the project is expected to progress as scheduled.

pdate
he agreement was approved at the Energy commission's October business meeting and the kickoff leeting was held in October 2015. The project is urrently underway.
the agreement was approved at the Energy commission's December 2015 business meeting.
he research team has created a new beta version of Cal- dapt with several new enhancements including a new way to display climate projections showing the full range f potential outcomes and selected climate projections. cripps Institution of Oceanography created the new imate scenarios using an advanced downscaling schnique.

pdate
roject was approved at the November Energy commission Business Meeting. Work did not begin in 015.
roject was approved at the November 12, 2015 Energy commission Business Meeting. Work did not begin in 015.
he grant was approved at an Energy Commission
susiness Meeting in December 2015.

pdate	
his agreement was approved at the December 2015 usiness Meeting.	
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